P R I S M

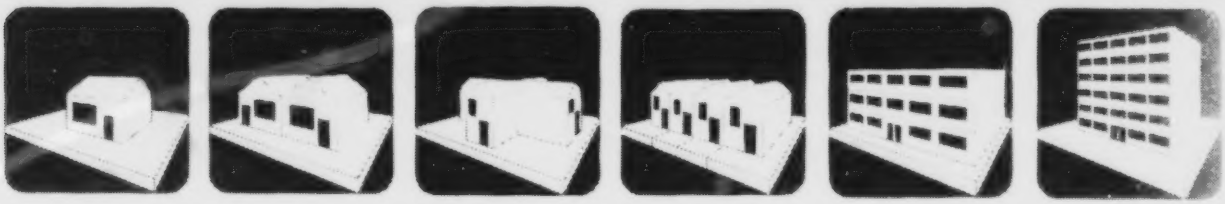
Report on Residential Population Densities in Edmonton

PRISM Report no. 1
May 1983

THE CITY OF Edmonton PLANNING

88-06034/

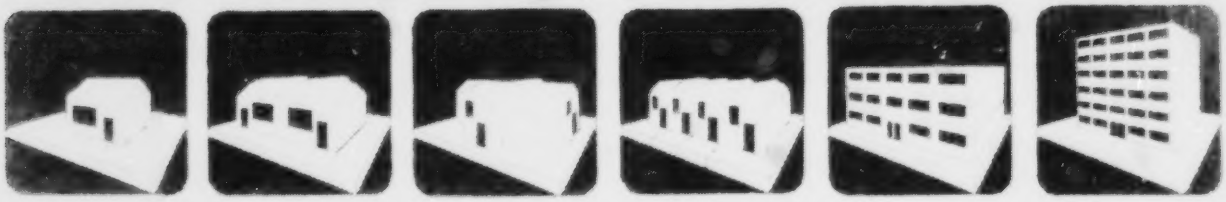
report on residential population densities in edmonton



prepared by
city of edmonton planning department
1983 05 02

ISBN 0 - 919831 - 06 - 0

executive summary



executive summary

summary A: study description

This study provides data on residential population densities in Edmonton. Average household size is reported for dwellings classified according to dwelling structure type, Land Use District and location. A figure for all units within each of the categories is presented along with figures on household size by number of bedrooms within each category. Measurements of data reliability, sample size and the percentage mix of dwellings by number of bedrooms are included. Household type profiles are provided which enhance interpretation of average household size figures. Detailed data for each dwelling type are reported in 26 data sets contained in the body of the report.

Each of the 26 data sets presented in this report is defined by a hierarchy of three variables. The first variable is building structure type, the second is area type, the third is Land Use District. There are 10 dwelling structure type categories:

1. Single Detached Dwellings
2. Semi-detached Dwellings
3. Duplex Dwellings
4. Triplex and Fourplex Dwellings
5. Rental Row House Dwellings
6. Condominium Row Housing Dwellings
7. Rental Walk-up Apartment Dwellings
8. Condominium Walk-up Apartment Dwellings
9. Rental High Rise Apartment Dwellings
10. Condominium High Rise Apartment Dwellings

The four types of areas are:

a) Area Structure Plan (ASP) Areas
b) Mature Suburban Areas
c) Older Neighbourhoods
d) City Centre

Data are reported for each of the structure types within areas of the city and by appropriate Land Use Districts wherever numbers of dwellings are sufficient to constitute a representative sample.

A summary of overall average household sizes for all data sets is reported on Table A: the Population Densities Summary Table. Other summary tables, a complete summary of average household size by number of bedrooms for each category of dwelling, a summary of percentage mix of units by number of bedrooms and household profiles are contained in the appendices.

The information used in this study was a product of the Planning Research Information System (PRISM) and statistical sampling techniques. PRISM was used to generate a sample of 49,504 dwelling units in the City of Edmonton. Sub-samples were formed on the basis of dwelling unit type, area of the city and Land Use District classifications. PRISM was used to generate statistics on the sub-samples.

table a population densities summary table

Average Persons Dwelling Type, Land Use District and Area Within the City[1]

Type of Dwelling	Land Use District	Area Within the City: Area Structure Plan Area	Mature Suburban Area	Older Neighbourhoods	City Centre
Single Detached	RF1	3.46 ±0.02	3.21 ±0.02	2.61 ±0.04	2.61 ±0.04
	RF2, RF3, RA7 & DC3	-	-	2.52 ±0.04	2.52 ±0.04
Semi-detached	RF4	3.32 ±0.12	-	-	-
	All Land Use Districts	-	3.18 ±0.16	3.18 ±0.16	3.18 ±0.16
Duplex[2]	All Land Use Districts	2.81 ±0.14	2.81 ±0.14	2.81 ±0.14	2.81 ±0.14
Triplex-Fourplex[2]	All Land Use Districts	2.44 ±0.18	2.44 ±0.18	2.44 ±0.18	2.44 ±0.18
Rental Row Housing	RF5	3.17 ±0.10	3.09 ±0.06	3.09 ±0.06	-
	RA7	2.48 ±0.12	3.27 ±0.12	-	-
	RA8	-	3.27 ±0.12	-	-
Condominium Row Housing	RF5	2.93 ±0.04	3.24 ±0.20	-	-
	RA7	2.88 ±0.14	3.02 ±0.18	-	-
	RA8	2.88 ±0.14	-	-	-
Rental Walk-up Apartment	RA7	2.04 ±0.08	1.91 ±0.06	1.71 ±0.04	1.45 ±0.02
	RA8	2.17 ±0.10	-	-	-
	DC3	-	-	-	1.45 ±0.02
Condominium Walk-up Apartment	RA7	1.82 ±0.04	-	-	-
	RA8	-	2.00 ±0.10	-	1.49 ±0.06
	RA9 & DC3	-	-	-	1.49 ±0.06
Rental High Rise Apartments	RA8, RA9 & DC3	-	-	-	1.43 ±0.02
Condominium High Rise Apart.	RA8, RA9 & DC3	-	-	-	1.71 ±0.04

1. Average Person Per Dwelling Unit is reported along with the confidence interval at a 95% level of confidence.

2. A city-wide Average is reported. Most duplex, triplex and fourplex units are located in Older Neighbourhoods.

summary B: highlights and implications

The Residential Population Densities Study was undertaken with the objective of providing necessary data for three specific uses. These are:

1. To project population and household composition in Area Structure Plan (ASP) Areas.

2. To assess the impact of infill development and redevelopment in Older Neighbourhoods.

3. To analyze the process of change in neighbourhoods over time insofar as the process is reflected in household size and composition changes.

The study does not presume to provide solutions to planning and policy questions with respect to management of the phenomena it seeks to measure. It does, however, provide information useful to planning and management programs.

The following highlights provide information from two perspectives. First, data for each type of structure is compared among different areas of the city. For example, data for single detached dwellings in ASP Areas are compared with data for the same type of dwelling in Mature Suburban Areas and Older Neighbourhoods. The second perspective is more general. It deals with the implication of household size and composition data for broader area and neighbourhood planning applications.

B.1 Single Detached Dwellings

The average size of households in ASP Area single detached dwellings is 3.46 persons per dwelling. This is approximately 8% larger than that in Mature Suburban Areas and 35% greater than in Older Neighbourhoods. Related differences are found in household composition. In ASP Areas, 66% of households include children 17 years of age and under: in Mature Suburban Areas, 44% of households include children: in Older Neighbourhoods, only 27% of households include children.

The relationship between household data and the age of neighbourhoods indicates a neighbourhood aging process. The inference is that new areas attract young adults with children. As the neighbourhood becomes fully developed, average household sizes reach a peak but begin to decline as the children mature and leave the family home. Other factors influence population dynamics such as locational choice by young adults without children who may prefer a central or Older Neighbourhood location to one in an ASP Area. Nevertheless, it is the high proportion of children in ASP Areas, single detached dwellings, that accounts for the high average size of households.

B.2 Semi-detached Dwellings

Semi-detached dwellings are located primarily in ASP Areas and Mature Suburban Areas. Data on household size and composition for semi-detached dwellings is similar to that for small and medium size single detached dwellings in the same areas. The difference that does exist is due largely to the fact that only a small proportion of semi-detached dwellings, compared with single detached dwellings, have more than three bedrooms. In other words, although semi-detached dwellings are built at higher dwelling unit densities than are single detached dwellings, the household composition and average household size is comparable with households occupying small and medium size single detached dwellings.

B.3 Duplex, Triplex and Fourplex Dwellings

Duplex, triplex and fourplex dwellings are located primarily in Older Neighbourhoods. They are a common form of infill and low density redevelopment housing in these neighbourhoods. The average household size and household composition, particularly with respect to households with and without children, is quite similar to that calculated for single detached dwellings in Older Neighbourhood infill and low density redevelopment areas. Presumably, replacement of older dwellings in these areas by duplex, triplex

summary B: highlights and implications

and fourplex dwellings may increase the total population in a neighbourhood but it will not substantially alter the average household composition or household size.

B.4 Row Housing Dwellings

Row housing fills an important niche in the overall housing stock of Edmonton as a source of housing for small family type households. Approximately 60% of rented row houses and 55% of condominium row houses are occupied by households with children 17 years of age and under. A substantial proportion of those households are single parent families.

Average household size figures and data on household composition are relatively consistent for RF5 density row housing, both rental and condominium, throughout the city. Generally, condominium units are more abundant in ASP Areas than in other areas: rental units are more abundant in Mature Suburban Areas and Older Neighbourhoods. For RF5 Districts in ASP Areas, the average household size for condominium row housing is 2.93 persons per unit. The average household size in rental units is somewhat higher; 3.17 and 3.09, in ASP Areas and Mature Suburban Areas respectively.

B.5 Walk-up Apartment Dwellings

Generally, walk-up apartment dwelling units are larger in suburban areas than they are in more central locations. Design differences are reflected in a steady decline in average household size between ASP Areas and the City Centre. Corresponding changes can be observed in household composition profiles. The proportion of households with children occupying rental walk-up dwellings declines from 26+5% between ASP Areas and the City Centre.

Condominium walk-up apartments are generally larger than rental units although there is not a substantial difference in average household size or composition between rental and condominium dwellings.

In the City Centre, households occupying rental and condominium dwellings have similar average household sizes of 1.45 and 1.49 persons per unit respectively. The proportion of households with children is a low 5% for both rental and condominium dwellings in the City Centre.

At the present time, walk-up apartments in ASP Areas are generally larger than walk-up apartment dwellings in older neighbourhoods. That is, ASP Area dwellings have, on average, more bedrooms and larger household sizes than do walk-ups in older areas. In planning for ASP Areas, planners should be conscious of the possibility that, at later stages of development, new walk-up apartments may have smaller units and smaller average household sizes as the ASP Areas mature.

B.6 High Rise Apartment Dwellings

High rise apartment dwellings, more than 80% of which are clustered in proximity to the City Centre, are occupied primarily by one and two adult households. Only 4% of households in both rental and condominium high rise apartment dwellings include children 17 years of age and under.

There are substantial design differences between condominium and rental high rise apartments. Notably, 71% of the stock of rental high rise dwellings are bachelor or one bedroom dwellings: an equal 71% of condominium dwellings are two bedroom units. These differences are reflected in different average household sizes in rental and condominium dwellings. In rental dwellings, the average household size is 1.45 persons per dwelling units; in condominium dwellings the average is 1.71 persons.

B.7 Redevelopment Planning

Redevelopment is a means to replace old housing stock with newer buildings and to respond to housing market demands for dwellings in desirable locations. Also, redevelopment at dwelling unit densities

higher than that of original housing stock has the effect of maintaining population densities in areas where it might otherwise decline.

Data from this study will permit an assessment of the demographic changes likely to result from infill and redevelopment of various forms. For example, duplex or triplex housing may add to the population of an area but household size and composition will be comparable with that found in existing development in Older Neighbourhoods. High rise or walk-up apartments will add substantially to the population and number of households but only a very small proportion of the additional households will include children. Row housing, on the other hand, will add somewhat less than apartments in terms of total population and numbers of households; however, the proportion of households with children will be substantially above that in neighbouring single detached housing.

These very different scenarios provide useful insight into assessing the compatibility of various forms of redevelopment with existing development and may be used as a means of optimizing the use of neighbourhood services and facilities such as schools and parks.

B.8 Area Structure Plans

It is proposed that data from this study be used as the basis for updating population projections for ASP Areas. Generally, the average household size for single and semi-detached dwellings is higher than previously estimated; while the average household size for multiple-unit dwellings is lower than was previously estimated. The net effect is that peak populations calculated with data from this study will be, for most areas, approximately 1-4% lower than previous estimates. Much of this shortfall may have already been overcome in neighbourhoods where land originally designated for RF1 density single detached dwellings has been redistricted to permit higher density RPL development. Only in designated "Town Centres," where most planned development consists of multiple unit structures, will peak populations be as much as 10% lower than previous estimates.

In a longer range perspective is the concern that upon reaching the peak population the population of a neighbourhood will begin to decline as households mature. Also, available data suggests that apartment development in the ASP Areas is lagging several years behind development of lower density housing. Consequently, the period of time during which the peak population is attained and maintained may not be very great. That is, not long after full development status is achieved with the final stages of apartment development, the average size of households occupying low density dwellings may be decreasing. During this process, the proportion of children in the neighbourhood will have reached a peak then started to decline. With changes in both average household size and composition during various stages of this process will come substantial shifts in demand for services and facilities in the neighbourhood. Although the foregoing scenario is, at this moment, quite hypothetical, an understanding of the process of population dynamics should be reflected in preparation of plans which take these dynamics into account.

B.9 Neighbourhood Population Dynamics

This study demonstrates variations in household size and composition related to types of dwellings and to the area in which a dwelling is located. Furthermore, the data demonstrates that the average size and composition of households in any particular neighbourhood changes as the neighbourhood itself changes from a new to a mature suburb and, finally, to an older neighbourhood subject to redevelopment. The process unfolds over many years but what is more important for planning purposes is that the phases are reasonably predictable.

summary B: highlights and implications

As a neighbourhood matures, and corresponding changes in average household characteristics occur, requirements for services and facilities will change in terms of both the level of any specific service and the types of services required by the population. For example, requirements for elementary and secondary school facilities in a particular community will reach a peak and begin to decline. In other words, a facility with the capacity to handle peak demands will be underutilized both while the population which it serves is still increasing and when it is in decline.

Understanding and predicting the course of neighbourhood population dynamics presents a challenge to planners and policy makers. The potential benefits are substantial in terms of: the ability to match current levels of services to the requirements of a neighbourhood, the knowledge necessary to design and plan facilities and services such that they can be adjusted to accommodate predictable changes in demand, as a basis of information required to prepare redevelopment plans which take into account differences in the effect of various types of redevelopment strategies, and the opportunity to develop programs and strategies for ASP Areas which will mitigate the effects of surges and declines in service demand. Consequently, the information obtained from this and related studies would assist planners and policy makers in evaluating the needs for community facilities and services.

table of contents

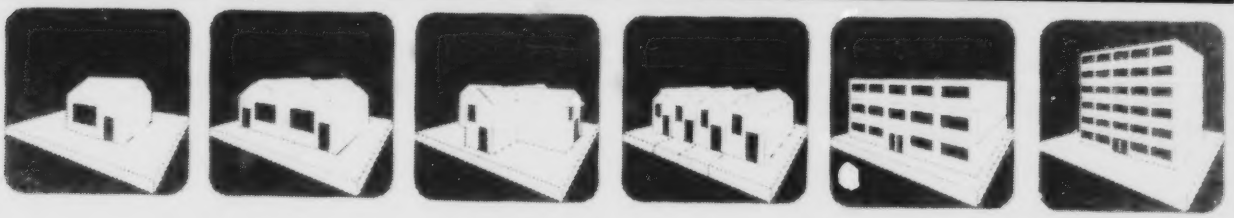


table of contents

Executive Summary I

Summary A: Study Description III
Summary B: Highlights and Implications V

B.1 Single Detached Dwellings V
B.2 Semi-detached Dwellings V
B.3 Duplex, Triplex and Fourplex Dwellings V
B.4 Row Housing Dwellings VI
B.5 Walk-up Apartment Dwellings VI
B.6 High Rise Apartment Dwellings VI
B.7 Redevelopment Planning VI
B.8 Area Structure Plans VII
B.9 Neighbourhood Population Dynamics VII

Table of Contents XI

List of Appendices XV

List of Tables XV

List of Maps XV

List of Figures XVI

Part I: **Introduction** 1

Part 2: **Technical Details** 5

2.1 Scope of the Study 7

2.1.1 Data Sources 7
2.1.2 Variable Values 7

2.2 The Study's Dwelling Unit Population 9

2.3 Methodology 10

2.3.1 Sample Selection Procedure 10
2.3.2 Reported Statistics 14
2.3.3 Sample Size 16

Part 3: **Single Detached Dwelling Units** 19

3.1 Area Structure Plan Areas 20
Land Use District - RF1

table of contents

3.2 Mature Suburban Areas 22
Land Use District - RF1

3.3 Older Neighbourhoods and City 24
Centre
Land Use District - RF1

3.4 Older Neighbourhoods and City 26
Centre
Land Use Districts - RF2,
RF3, RA7 & DC3

3.5 Single Detached Dwellings 28
Household Type Profiles

Part 4: Semi-Detached Dwelling Units

4.1 Area Structure Plan Areas 32
Land Use District - RF4

4.2 Mature Suburban Areas, Older 34
Neighbourhoods and City Centre
Land Use Districts - All Districts

4.3 Semi-Detached Dwellings 36
Household Type Profiles

Part 5: Duplex, Triplex and Fourplex Dwelling Units

5.1 Duplex Dwelling Units 40
All Areas
Land Use Districts - All Districts

5.2 Triplex and Fourplex Dwelling Units 42
All Areas
Land Use Districts - All Districts

5.3 Duplex, Triplex and Fourplex Dwellings 44
Household Type Profiles

Part 6: Row Housing Dwelling Units

Rental

6.1 Area Structure Plan Areas 48
Land Use District - RF5

table of contents

6.2 Area Structure Plan Areas 50
Land Use District - RA7

6.3 Mature Suburban Areas and 52
Older Neighbourhoods
Land Use District - RF5

6.4 Mature Suburban Areas 54
Land Use Districts - RA7 & RA8

Condominium

6.5 Area Structure Plan Areas 56
Land Use District - RF5

6.6 Area Structure Plan Areas 58
Land Use Districts - RA7 & RA8

6.7 Mature Suburban Areas 60
Land Use District - RF5

6.8 Mature Suburban Areas 62
Land Use District - RA7

6.9 Row Housing Dwellings 64
Household Type Profiles

6.9.1 Row Housing - Rental
6.9.2 Row Housing - Condominium

Part 7: Walk-up Apartment Dwelling Units

Rental

7.1 Area Structure Plan Areas 68
Land Use District - RA7

7.2 Area Structure Plan Areas 70
Land Use District - RA8

7.3 Mature Suburban Areas 72
Land Use District - RA7

7.4 Older Neighbourhoods 74
Land Use District - RA7

7.5 City Centre 76
Land Use Districts - RA7 & DC3

table of contents

Condominium

7.6 Area Structure Plan Areas 78
Land Use District - RA7

7.7 Mature Suburban Areas 80
Land Use District - RA8

7.8 City Centre 82
Land Use Districts - RA8, RA9 & DC3

7.9 Walk-up Apartment Dwellings 84
Household Type Profiles

7.9.1 Walk-up Apartments - Rental 84
7.9.2 Walk-up Apartments - Condominium 86

Part 8: **High Rise Apartment Dwelling Units**

Rental

8.1 High Rise Apartment Dwelling Units 90
City Centre
Land Use Districts - RA8, RA9 & DC3

Condominium

8.2 High Rise Apartment Dwelling Units 92
City Centre
Land Use Districts - RA8, RA9 & DC3

8.3 High Rise Dwellings 94
Household Type Profiles

8.3.1 High Rise Apartments - Rental 94
8.3.2 High Rise Apartments - Condominium 95

Part 9: **Synopsis of Results** 97

9.1 Single Detached Dwelling Units 99

9.2 Semi-Detached Dwelling Units 100

9.3 Duplex, Triplex and Fourplex Dwelling Units 100

9.4 Row Housing Dwelling Units 101

9.5 Walk-up Apartment Dwelling Units 102

9.6 High Rise Apartment Dwelling Units 104

appendices, tables and maps

Appendix 1	Statistical Calculations	107
Appendix 2	Population Projection Formulae for Small Areas Based on Average Persons Per Dwelling Unit	109
Appendix 3	Dwelling Unit Population Strata and Sample Clusters	113
Appendix 4	Residential Land Use Districts	114
Appendix 5	Population Density Estimates by Selected Land Use Districts (Zoning Categories) City of Edmonton Planning Department - 1974, 1978	115
Appendix 6	Population Densities Statistics by Number of Bedrooms	116
Appendix 7	Percentage Mix of Dwellings by Number of Bedrooms	117
Appendix 8	Household Profile Summary	118
Appendix 9	Ratio of Persons to Bedrooms	119

Table A	Population Densities Summary Table	IV
Table B	Residential Building Structure Types	8
Table C	Residential Land Use Districts	8
Table D	Household Classification, Size and Structure	8
Table E	Building Structure Types Permitted Under Residential Land Use District Designations	11
Table F	Population Densities Study - Sampling Fractions	17

Map 1	Population Densities Study Areas	12
Map 2	Population Densities Study Sample Clusters	15

list of figures

Figure 3.1	Single Detached Dwelling Units Area Structure Plan Areas Land Use District - RF1	21
Figure 3.2	Single Detached Dwelling Units Mature Suburban Areas Land Use District - RF1	23
Figure 3.3	Single Detached Dwelling Units Older Neighbourhoods and City Centre Land Use District - RF1	25
Figure 3.4	Single Detached Dwelling Units Older Neighbourhoods and City Centre Land Use Districts - RF2, RF3, RA7 & DC3	27
Figure 3.5	Single Detached Dwellings Household Type Profiles	29
Figure 4.1	Semi-detached Dwelling Units Area Structure Plan Areas Land Use District - RF4	33
Figure 4.2	Semi-detached Dwelling Units Mature Suburban Areas, Older Neighbourhoods and City Centre Land Use Districts - All Districts	35
Figure 4.3	Semi-detached Dwellings Household Type Profiles	37
Figure 5.1	Duplex Dwelling Unit All Areas Land Use Districts - All Districts	41
Figure 5.2	Triplex and Fourplex Dwelling Units All Areas Land Use Districts - All Districts	43

list of figures

Figure 5.3	Duplex, Triplex and Fourplex Dwellings	45
	Household Type Profiles	
Figure 6.1	Row Housing Dwelling Units - Rental	49
	Area Structure Plan Areas Land Use District - RF5	
Figure 6.2	Row Housing Dwelling Units - Rental	51
	Area Structure Plan Areas Land Use District - RA7	
Figure 6.3	Row Housing Dwelling Units - Rental	53
	Mature Suburban Areas and Older Neighbourhoods Land Use District - RF5	
Figure 6.4	Row Housing Dwelling Units - Rental	55
	Mature Suburban Areas Land Use Districts - RA7 & RA8	
Figure 6.5	Row Housing Dwelling Units - Condominium	57
	Area Structure Plan Areas Land Use District - RF5	
Figure 6.6	Row Housing Dwelling Units - Condominium	59
	Area Structure Plan Areas Land Use Districts - RA7 & RA8	
Figure 6.7	Row Housing Dwelling Units - Condominium	61
	Mature Suburban Areas Land Use District - RF5	
Figure 6.8	Row Housing Dwelling Units - Condominium	63
	Mature Suburban Areas Land Use District - RA7	
Figure 6.9.1	Row Housing Dwellings - Rental	65
	Household Type Profiles	

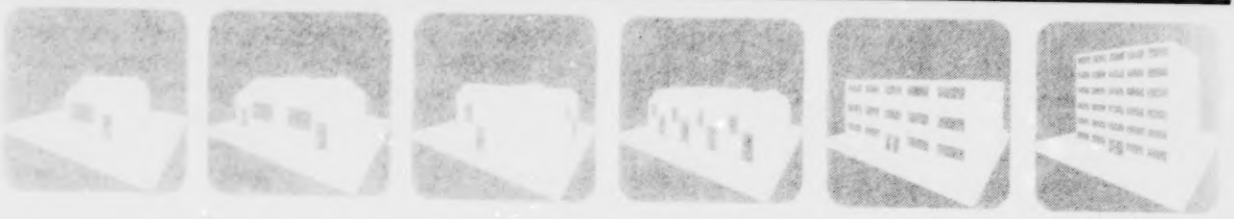
list of figures

Figure 6.9.2	Row Housing Dwellings - Condominium	66
	Household Type Profiles	
Figure 7.1	Walk-up Apartment Dwelling Units - Rental	69
	Area Structure Plan Areas Land Use District - RA7	
Figure 7.2	Walk-up Apartment Dwelling Units - Rental	71
	Area Structure Plan Areas Land Use District - RA8	
Figure 7.3	Walk-up Apartment Dwelling Units - Rental	73
	Mature Suburban Areas Land Use District - RA7	
Figure 7.4	Walk-up Apartment Dwelling Units - Rental	75
	Older Neighbourhoods Land Use District - RA7	
Figure 7.5	Walk-up Apartment Dwelling Units - Rental	77
	City Centre Land Use Districts - RA7 & DC3	
Figure 7.6	Walk-up Apartment Dwelling Units -	79
	Condominium	
	Area Structure Plan Areas Land Use District - RA7	
Figure 7.7	Walk-up Apartment Dwelling Units -	81
	Condominium	
	Mature Suburban Areas Land Use District - RA8	
Figure 7.8	Walk-up Apartment Dwelling Units -	83
	Condominium	
	City Centre Land Use Districts - RA8, RA9 & DC3	

list of figures

Figure 7.9.1	Walk-up Apartment Dwellings - Rental ..... Household Type Profiles	85
Figure 7.9.2	Walk-up Apartment Dwellings - Condominium ..... Household Type Profiles	87
Figure 8.1	High Rise Apartment Dwelling Units - Rental ..... City Centre Land Use Districts - RA8, RA9 & DC3	91
Figure 8.2	High Rise Apartment Dwelling Units - Condominium ..... City Centre Land Use Districts - RA8, RA9 & DC3	93
Figure 8.3.1	High Rise Apartment Dwelling Units - Rental ..... Household Type Profiles	94
Figure 8.3.2	High Rise Apartment Dwelling Units - Condominium ..... Household Type Profiles	95

part 1: introduction



part 1: introduction

The purpose of this report is to provide for planners, demographic researchers and policy and program analysts, useful and reliable statistics on present residential population densities and on the relationship between dwelling types and household size and type in the City of Edmonton.

Residential population density data are used primarily for projections of expected populations in small areas within the city based on planned residential development. The Planning Department, along with other City Departments, public agencies and private organizations, use such projections for a wide variety of applications. These include:

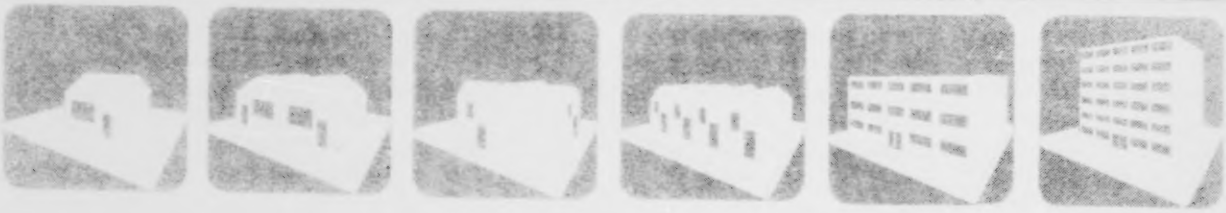
- preparation and review of residential development proposals,
- planning the size and location of public and private facilities such as utility lines, sewer and water systems, hospitals, branch offices, and
- review of policies and programs.

This report presents Average Persons Per Dwelling Unit (Average Household Size) figures for a selection of common dwelling unit types. Sample data are disaggregated by location within the city and by Land Use Districts wherever meaningful differences are identified. A composite figure for each unit type and disaggregated figures by unit size, as measured by number of bedrooms, are reported. The unit size mix of each type of dwelling unit is also indicated. For multiple family residential structures, separate figures are presented for condominium and rental buildings.

The figures reported are the product of statistical sampling and analysis techniques using the Planning Research Information System (PRISM), which integrates demographic data from Edmonton's Annual Civic Census with property data, including land use and structure type data, from the Assessment Department data base. The effective date of the data is 1981 05 01. Estimates of the reliability of population density data are provided by the inclusion of standard error data. Estimates of data reliability are of particular interest to data users to whom a known degree of confidence in determining maximum or minimum population estimates is of importance. Standard error data, combined with data on the number of cases used in calculating average persons per dwelling unit figures, may be used to calculate standard deviation for more sophisticated use.

Household type profiles are presented in this report as a supplement to population density data. Household type data is of interest in itself and of use in enhancing the value of population density data for demographic studies, market analysis and facilities planning. The profiles, as they differ between housing structure types in a given area of the city and within the same housing structure type in different areas of the city, indicate clear differences in the composition of households. These underlying differences provide substantial insight regarding the relationship between households and the characteristics of the dwellings they occupy which is useful in interpreting population density data.

part 2: technical details



part 2: technical details

2.1 scope of the study

2.1.1 Data Sources

This report provides data on average persons per dwelling unit for a selection of dwelling unit types, disaggregated by number of bedrooms, in specified residential Land Use Districts. The data are disaggregated by location within the city wherever both meaningful (i.e. representative of a substantial, identifiable sub-set of dwellings) and statistically significant differences are identified. Supplementary data on the mix of dwellings by size, measured by number of bedrooms, for each type of dwelling unit are included along with information on household types.

The sources of data used in this study are the 1981 Civic Census and the Assessment Department's property assessment data base. The data from these sources are temporally matched with an effective date of 1981 05 01, using PRISM. Data on Civic Census households and assessment properties are matched by municipal address to create a composite PRISM data file.

Of the several types of data available from the PRISM data file, the study uses the following at the dwelling unit level:

1. Size of dwelling unit measured by number of bedrooms.
2. Type of residential building structure including condominium and rental multiple family units.
3. An indicator that a dwelling unit is either occupied or vacant.
4. Land Use District codes as defined in the City's Land Use Bylaw (Bylaw #5996).
5. Number of residents in a dwelling unit.
6. Type of household occupying a dwelling unit.

The six variables listed exist in PRISM data files in the required form. The first four have been drawn directly from the Civic Census or property assessment data base. The remaining two, the number of residents and the type of household variables, are computed during the creation of PRISM files.

2.1.2 Variable Values

1. The "size of dwelling unit" variable (measured by number of bedrooms) is represented by five possible values. The values are:

   bachelor unit,
   one bedroom,
   two bedroom,
   three bedroom, and
   four or more bedrooms.

   The number of bedrooms data are drawn from the Civic Census. In a minority of cases, these data may be subject to differing interpretations. For example, an apartment unit with two bedrooms plus a den or work room might be classified as a three bedroom apartment by a household using the additional room for sleeping quarters. Similarly, a three bedroom apartment might be classified as a two bedroom unit where one room is used as work space. In a very few cases, where "bedroom count" values are likely to prove misleading, data were removed from the sample.

2. The variable indicating type of residential building structure is obtained from the property assessment data base. Ten categories of building structure types are used. The categories are as listed in Table B.

   It should be noted that condominium ownership does not necessarily imply an owner-occupied dwelling. A substantial minority of condominium row housing

part 2: technical details

table b residential building structure types
table c residential land use districts
table d household classification, size and structure

table b

Type 1	Single Detached Dwellings
Type 2	Semi-detached Dwellings
Type 3	Duplex (up and down and side by side)
Type 4	Triplex and Fourplex
Type 5	Row Housing
Type 6	Condominium Row Housing
Type 7	Walk-up Apartment including Walk-up Apartment with secondary use
Type 8	Condominium Walk-up Apartment
Type 9	High Rise Apartment including High Rise Apartment with secondary use
Type 10	Condominium High Rise Apartment

table c

Codes	Names
RF1	Single Detached Residential District
RF2	Low Density Infill District
RF3	Low Density Redevelopment District
RF4	Semi-detached Residential District
RF5	Row Housing District
RA7	Low Rise Apartment District
RA8	Medium Rise Apartment District
RA9	High Rise Apartment District
DC3	Temporary Holding District

table d

Household Classification	Household Size	Household Structure
Single Adult	one person	one person 18 years of age or older
Adult Pair	two people	two people both 18 years of age or older
Adult Group	three or more people	Three or more people 18 years of age or older
Single Adult with Children	two or more people	One person 18 years of age or older plus one or more people 17 years of age or younger
Adult Pair with Children	three or more people	Two 18 people years of age or older plus one or more people 17 years of age or younger
Adult Group with Children	four or more people	Three or more people 18 years of age or older plus one or more people 17 years of age or younger

dwellings and a majority of condominium walk-up and high rise apartment dwellings are renter-occupied units.

3. The variable indicating that a dwelling unit is either occupied or vacant is obtained from the Civic Census.

4. The Land Use District variable is obtained from the property assessment data base. The Land Use Districts used in this study are listed in Table C. A brief description of permitted and discretionary land uses in these Land Use Districts appears in Appendix 4.

   The DC3 Land Use District was included as a residential Land Use District because, at the effective date of the data, virtually all of the City Centre carried this land use designation and thus a wide range of housing types, particularly high rise apartment dwellings, are to be found in this district. The residential Land Use Districts excluded from this study are:

   RPL - Planned Lot Residential District
   RF6 - Medium Density Multiple Family District
   RMX - Residential Mixed Use District
   RR - Rural Residential District
   RMH - Mobile Home District

   There was not a sufficient number of occupied dwelling units within these Land Use Districts at the time of data collection to permit analysis.

5. The household size variable is obtained through a PRISM computation using Civic Census data. One household consists of the people occupying one dwelling unit. Household size is, therefore, a tally of the number of people residing in a dwelling unit. The minimum household size is one person. The maximum household size found in the study is 11 people. In this study, the terms "average household size," "average persons per dwelling unit" and "average PPDU" have the same meaning and are therefore interchangeable.

6. The household type variable is obtained via a PRISM computation using Civic Census data. Household type classifications are based on household size and the age of each person in a household. The classifications used in this study are listed on Table D.

2.2 THE STUDY'S DWELLING UNIT POPULATION

The study's dwelling unit population consists of all dwelling units in the City of Edmonton which could have been chosen for analysis. For this study, the population of dwelling units from which samples were chosen for analysis was identified by two criteria; building structure type and Land Use District. Vacant dwelling units were excluded from analysis. The population was, therefore, restricted to occupied dwelling units of the types listed among the 10 building structure classifications on Table B and located within one of the nine Land Use District classifications listed in Table C. This population includes approximately 90% of the estimated 198,000 occupied dwelling units in the City of Edmonton. The remaining 10% are distributed among 65 additional structure type classifications used by the Assessment Department, a distribution which prohibits useful analysis for the purposes of this study. Since the study's samples were chosen from a specific population, the results of analysis are representative of components of that population only.

For this study, no data are reported on any building structure type located in a residential Land Use District in which it is neither a permitted nor a discretionary use (i.e. a non-conforming residential structure).

For example, the RF1 - Single Detached Residential District permits only single detached housing although semi-detached dwellings may be approved at the discretion of the Development Officer: other residential land uses would be considered non-conforming. Permitted and discretionary building structure types in each residential Land Use District are identified in Table E.

In summary, from the criteria used to identify the study's dwelling unit population, a dwelling unit is part of the study population if it meets the following conditions:

1. It was assessed prior to 1981 05 01.
2. It was occupied at the time of the 1981 Civic Census.
3. It is of a building structure type listed on Table B.
4. It is within a residential Land Use District listed on Table C.
5. It is a building structure type that conforms to the requirements of its Land Use District.

Any dwelling unit that meets these conditions in the City of Edmonton is considered part of the dwelling unit population and is eligible for selection to the study sample. The number of dwellings in the study population is approximately 180,000 units.

2.3 METHODOLOGY

2.3.1 Sample Selection Procedure

The sampling procedure used in the study involves the selection of sample clusters of dwelling units from each stratum or sub-population of a stratified population of dwelling units. The procedure involves three steps. They are:

1. Identification of clusters of dwelling units.
2. Allocation of each cluster to a stratum of a stratified population of dwelling units.
3. Selection of sample clusters from each stratum of the population of dwelling units.

a) Identification of Clusters

Study clusters are identified in terms of existing or possible plan areas and equivalent areas. The size range of clusters is based on area population. Generally, cluster populations range between 5,000 and 11,000 people although one larger cluster of special interest (City Centre) is included in the sample. Three types of areas are used to assist in identifying clusters:

(i) An existing or possible Area Redevelopment Plan (ARP) area.
(ii) Old central city neighbourhoods as identified in the Older Neighbourhoods Study (1977).
(iii) Neighbourhoods or communities within an Area Structure Plan (ASP) area or an equivalent aggregation of subdivisions within mature suburban areas.

Based on these population and boundary guidelines, 73 sample clusters were identified.

b) Dwelling Unit Population Stratification

The population of dwelling units is stratified by geographic location and by the period of first major urban development in the area which the dwellings are located. The City Centre area is one stratum. The remaining area of the city is subdivided into sections representing three periods of development activity. The result is four separate divisions or strata including the City Centre area.

table e building structure types permitted under residential land use district designations

table e

Building Structure Type	Land Use District RF1	RF2	RPL	RF3	RF4	RF5	RF6	RA7	RA8	RA9	Estimated Number of Dwelling Units in Edmonton*
1. Single Detached Dwelling	■	■	■	■	●	●	●	●	●	●	95,700
2. Semi-detached Dwelling	●	●	●	■	■	■	■	●	●	●	3,300
3. Duplex (up and down and side by side)	●	●	●	■	●	●	■	●	●	●	2,500
4. Triplex and Fourplex	○	○	●	●	●	●	●	●	●	●	1,000
5. Row Housing	○	○	●	●	●	■	■	■	■	■	9,000
6. Condominium Row Housing	○	○	●	●	●	■	■	■	■	■	14,000
7. Walk-up Apartment	○	○	○	○	○	○	●	■	■	■	39,000
8. Condominium Walk-up Apartment	○	○	○	○	○	○	●	■	■	■	6,700
9. High Rise Apartment	○	○	○	○	○	○	○	○	■	■	11,500
10. Condominium High Rise Apartment	○	○	○	○	○	○	○	○	■	■	2,500

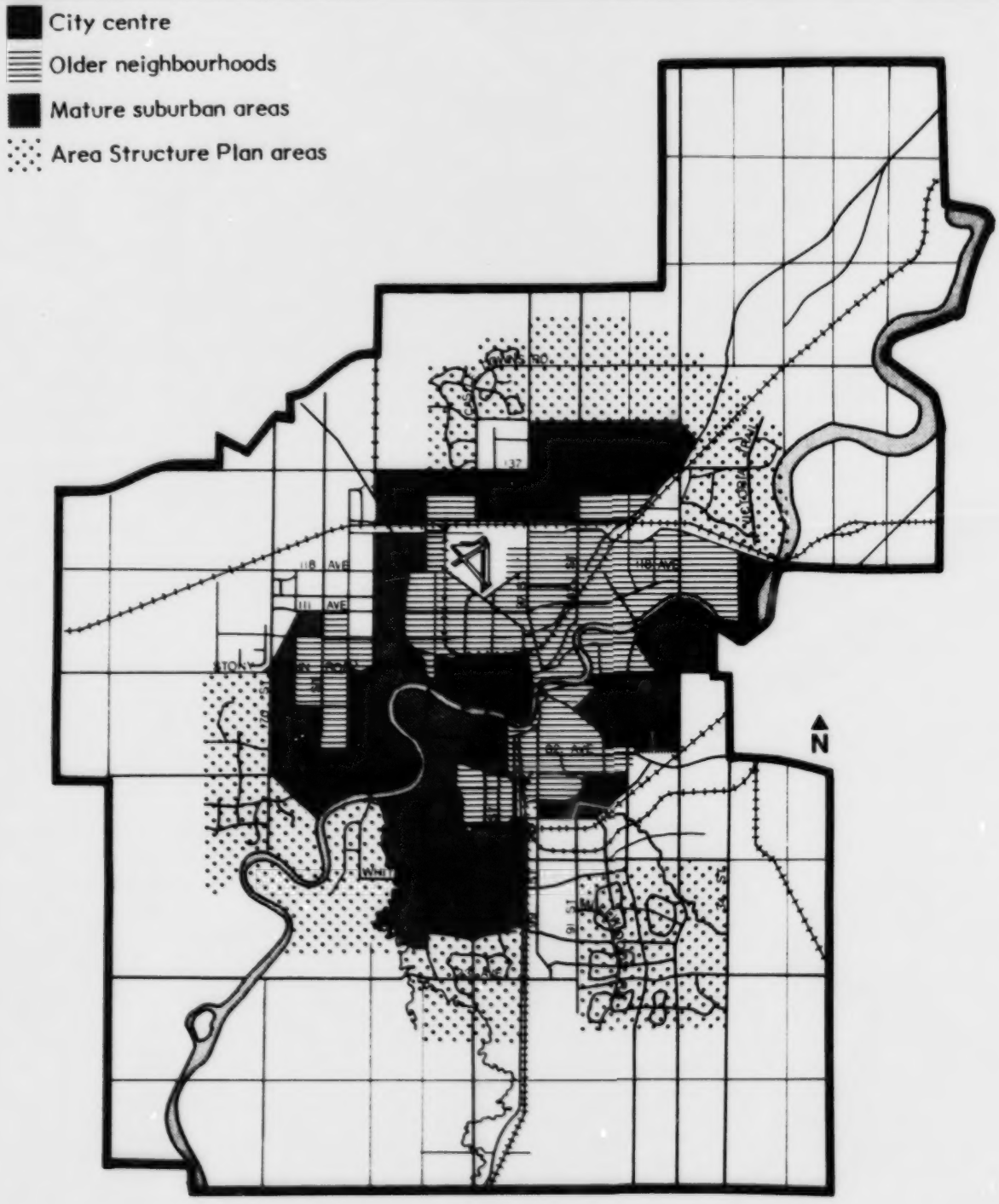
○ Building Structure Type not permitted under Land Use District

● Building Structure Type is a discretionary use under Land Use District

■ Building Structure Type is permitted under Land Use District

* Source of Estimate of Dwelling Units is the Assessment data base, 1981 11 09. Numbers have been rounded upwards to the nearest hundred.

map 1 population densities study areas



The four strata created by the stratification criteria are as follows:

(i) City Centre
(ii) Older Neighbourhoods
(iii) Mature Suburban Areas
(iv) ASP Areas

The City Centre stratum consists of the city's downtown area including the ARP Areas of Oliver, Downtown and Garneau. The City Centre was developed early in the city's history but has undergone recent and extensive redevelopment. A large proportion of Edmonton's high rise apartment dwelling units are concentrated in this area. For these reasons, the City Centre area is considered to be unique and of special interest.

All other clusters of dwelling units in the city have been classified according to period of development. Three periods were used. Older Neighbourhoods are areas developed before 1951. Redevelopment pressures are common in these areas. Mature Suburban Areas are areas developed between 1951 and 1971. These areas represent several phases of subdivision and neighbourhood design. They are stable areas in which redevelopment is unlikely at present and existing development is in a mature state although some infill activity is occurring. ASP Areas are areas developed after 1971. Development concepts are based on ASPs and in many cases additional development on vacant land is underway.

Each of the city's clusters of dwelling units is allocated to one of these strata. The classifications applied to all areas of the city are indicated on Map 1.

c) Sample Cluster Selection

For this study, 21 sample clusters were used. This represents a sampling fraction of approximately 28% of all dwelling units in the population. The 21 clusters represent the City Centre stratum as 1 cluster, 6 clusters were drawn from both the Mature Suburban Area stratum and the ASP Area stratum and 8 clusters from the Older Neighbourhoods stratum.

The City Centre stratum in its entirety was used in the sample. For each of the other strata, clusters were chosen using a set of selection conditions. The city was divided into quadrants using the following boundaries:

Quadrant 1 West of 97th Street
North of the North Saskatchewan River

Quadrant 2 East of 97th Street
North of the North Saskatchewan River

Quadrant 3 East of 103rd Street
South of the North Saskatchewan River

Quadrant 4 West of 103rd Street
South of the North Saskatchewan River

The first sampling condition required that at least one cluster from each stratum fall within each quadrant. Under this condition, the first cluster in each stratum was chosen at random. The second was chosen at random, but was rejected if it shared a boundary line with the first cluster. The rejection criterion applied only for clusters within the same quadrant and stratum. Areal contiguity

between clusters from different quadrants or strata was permitted. Subsequent cluster selection, followed the same selection conditions with respect to clusters previously drawn. The sample clusters are indicated on Map 2 and listed in Appendix 3.

2.3.2 Reported Statistics

Data files for selected neighbourhoods were constructed and processed using PRISM. Statistics produced by PRISM were incorporated into the data sets contained in this report. Each data set represents a dwelling category and includes the following statistics for each dwelling category:

1. average persons per dwelling unit (PPDU), by number of bedrooms,
2. average persons per dwelling (PPDU), for all units,
3. standard error of average PPDU estimate, by number of bedrooms,
4. standard error of average PPDU estimate, for all units,
5. number of cases, by number of bedrooms,
6. number of cases, for all units,
7. dwelling units, by number of bedrooms, as a percentage of all dwellings, and
8. households, by type, as a percentage of all households.

Statistics are presented for dwelling unit types in specified areas and Land Use Districts in the city.

The data sets appearing in this report meet two selection requirements.

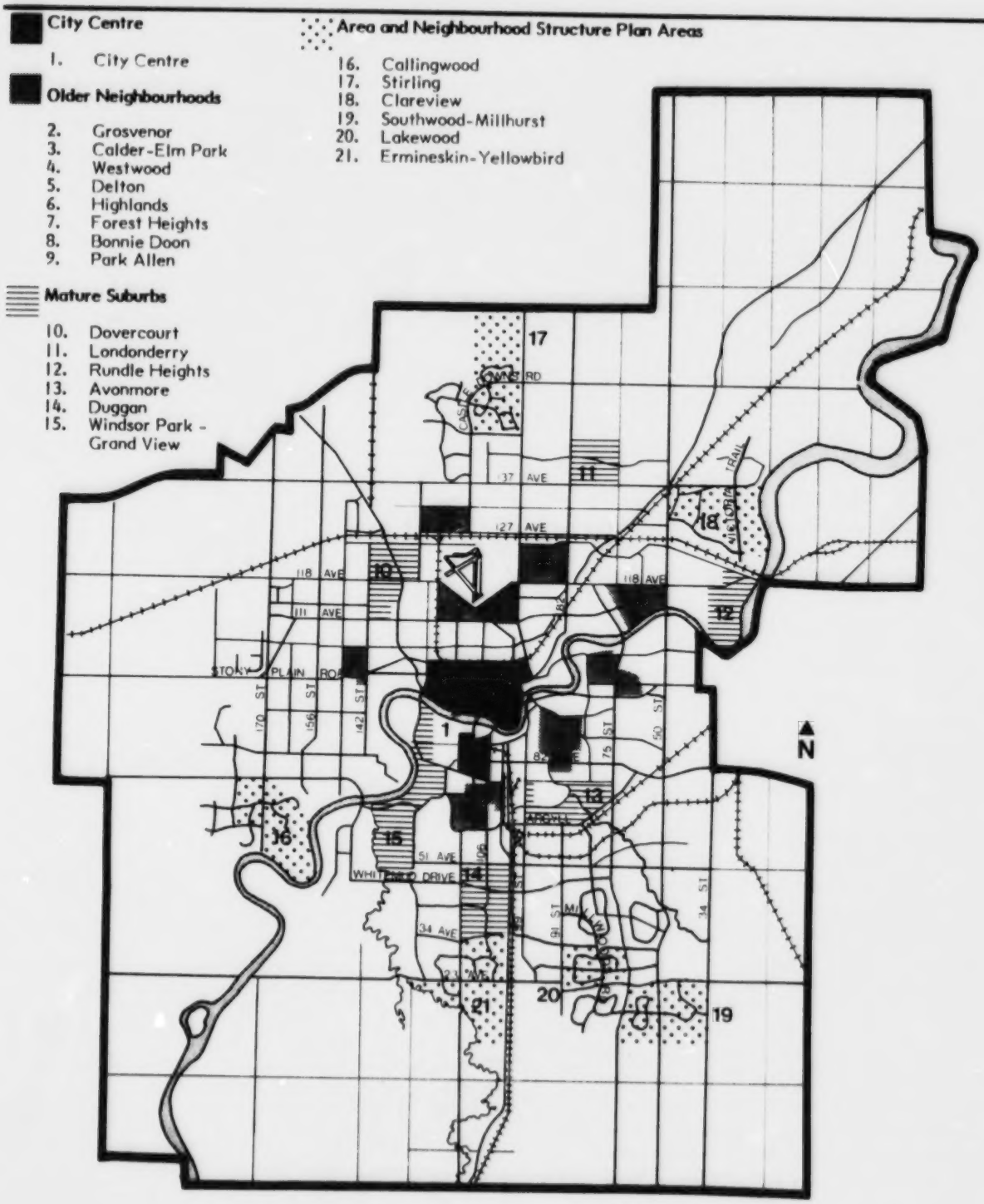
a) The number of cases in the data set must be large enough that the statistics are of general applicability and are not representative of unusual or unique situations only. Even under this condition it must be recognized that the statistics reported represent the situation as it existed at the effective date of the data. Extrapolation of these results should be based as much on sound judgement as on the data. This is especially true in the absence of comparable time series data.

b) The standard error of estimate of average persons per dwelling unit for the "all units" figure must be less than 4% of the average PPDU value. This condition ensures that, at a 95% confidence level (i.e. 19 times out of 20), the average PPDU value of the sample is within 8% of the actual sub-population average PPDU. In most cases, the standard error is much lower than 4% of the average PPDU value.

In several cases data from different areas and Land Use Districts are combined. For example, Figure 3.4 incorporates data from both Older Neighbourhoods and the City Centre including Land Use Districts RF2, RF3, RA7 and DC3 for single detached dwelling units. Combinations of this sort are based on similarity of average PPDU figures when standard error values are taken into consideration. In effect, combinations of categories are used where consideration of standard error indicated no significant difference, in average household size, between categories. Figures for Duplex and Triplex-Fourplex structures are reported at the highest level of aggregation possible, that being a city-wide data set for each group.

While average PPDU statistics, with associated measurements of reliability (i.e. standard error), are the key data in this report, information on the mix of dwelling units by number of bedrooms and on household type are of interpretive value. The mix of dwelling units by number of bedrooms data reflects the actual situation existing in the housing stock at the effective date of the data, 1981 05 01. Future variations in the

map 2 population densities study sample clusters



number of bedrooms mix of planned small scale development may result in different overall average PPDU figures for that development. Appendix 2, Section B provides the formulae necessary to adjust average PPDU figures for variations in the number of bedrooms mix.

Household profile data provide insights into the manner in which households of various compositions are distributed amongst the housing stock in different areas of the city. This distribution is based on both the choices made by consumers and the characteristics of the supply of housing available. Differences in household type distributions, associated with differences in housing stock, are useful for demographic analysis in small areas.

2.3.3 Sample Size

This report incorporates data from 49,504 occupied dwelling units in the City of Edmonton. The large sample size is used to obtain a high level of reliability of average PPDU statistics and, at the same time, to permit disaggregation of data by location within the city, structure type, Land Use District and number of bedrooms. PRISM provides an efficient vehicle to permit processing and analysis of large controlled samples at various levels of aggregation.

Of central importance is the reliability of data for dwelling unit structure types in their primary Land Use Districts (e.g. single detached dwellings in the RF1 -Single Detached Residential District). For example, data on a total sample of 18,783 single detached dwellings in RF1 Land Use Districts is reported. Of this total sample, data on single detached dwellings in RF1 Land Use Districts in ASP Areas represent a sub-sample of 7,364 units. For this sub-sample the standard error is less than 1% of the average PPDU for all cases and less than 2% for each of the number of bedroom categories.

Standard error or "sampling variability" may be defined as the possible discrepancy between the results from a sample survey and the results that would have been obtained from a census. Although all data reported for this study are subject to some sampling variability, and care should be taken in analyzing the data, the large sample sizes used results in relatively low levels of sampling variability. In other words, the large sample size permits computation of very reliable figures for housing types of critical importance. At the same time, large sample sizes permit computation of less reliable but useful average household sizes for housing types which are less abundant but of interest in the overall housing stock.

Overall, the sampling fraction (i.e. the total sample divided by the total population) is 28% of the total population of dwelling units within the city. Sampling fractions by structure type are reported in Table F.

table f population densities study - sampling fractions

table f

Dwelling Unit Structure Type	Sample Size	Estimated * Population Size	Sampling Fraction
1. Single Detached Dwelling Units	24,840	93,330	27%
2. Semi-detached Dwelling Units	709	3,120	23%
3. Duplex Dwelling Units	355	2,380	15%
4. Triplex-Fourplex Dwelling Unit	146	890	16%
5. Rental Row Housing Dwelling Unit	2,826	8,570	33%
6. Condominium Row Housing Dwelling Units	3,197	13,410	24%
7. Rental Walk-up Apartment Dwelling Units	8,728	37,580	23%
8. Condominium Walk-up Apartment Dwelling Units	1,657	6,350	26%
9. Rental High Rise Apartment Dwelling Unit	6,097	11,390	54%
10. Condominium High Rise Apartment Dwelling Unit	949	2,310	41%

*The population size estimate has been adjusted to exclude units that are vacant or under construction from Assessment Department total unit counts of 1981 11 09.

part 3: single detached dwelling units

part 3: single detached dwelling units

3.1 area structure plan areas

RF1

Single detached dwellings constitute approximately 50% of all existing dwelling units in ASP Areas. Virtually all single detached units in ASP Areas are located in RF1 Land Use District reflecting a high degree of conformity between Land Use Districts and their principal residential structure type in areas developed during the 1971-1981 decade. Overall, development planning in these areas has been based on large scale ASPs with more detailed subdivision design based on Neighbourhood Structure Plans (NSP).

At 3.46, the average PPDU or size of households occupying single detached dwellings in ASP Areas is the highest reported for any dwelling structure type in any area of the city. With a sample of 7,364 dwellings, the sample average is, at a 95% confidence level, within ±0.02 PPDU of the true average for RF1 single detached units in ASP Areas.

With approximately 75% of units reported to have three bedrooms and an additional 19% with four or more bedrooms, the stock of single detached dwellings in ASP Areas are designed for family or group type households. A smaller but substantial number of units, 6%, are reported to have two bedrooms. Interpretation of this figure is subject to the qualification that reported numbers of bedrooms may be influenced by actual use of interior space as well as physical structure (i.e. a room may be used as a den, a workspace or a bedroom). While the sample does include a selection of small units having only two functional bedrooms, a portion of the reported two bedroom units are designed as three bedroom units, however, due to small household size and alternative uses of space, only two rooms are used as sleeping quarters. Similarly, four bedroom units may be reported as three bedroom units. Conversely, the finishing of a basement or other renovation may add one or more bedrooms to a dwelling. These differences in interpretation do not affect the reliability of the overall average household size statistic.

There is a clear relationship between the number of bedrooms in a single detached dwelling and the size of resident households. The implication is that dwellings with more bedrooms, and presumably but not necessarily more floor space, provide accommodation for the city's larger households. The average number of persons per bedroom (i.e. average PPDU divided by number of bedrooms) is greater than one for all number of bedroom categories. The ratio of people to bedrooms decreases as number of bedrooms increase from 1.31 persons per bedroom in two bedroom units to 1.02 persons per bedroom in four or more bedroom units.

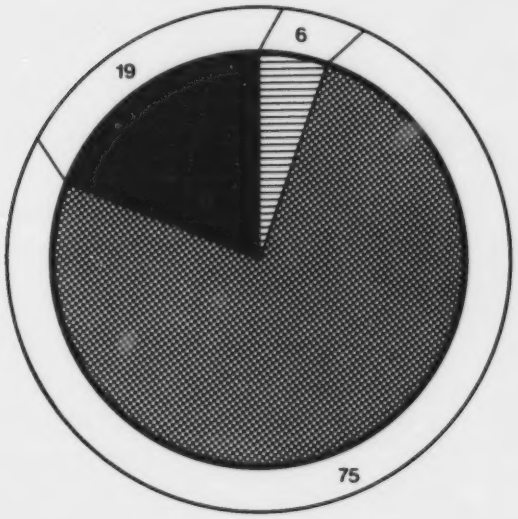
part 3: single detached dwelling units

3.1 area structure plan areas

Land Use District
RF1

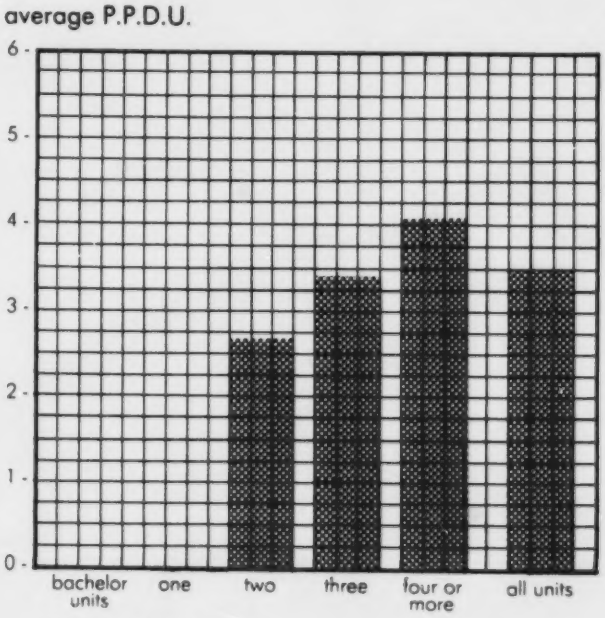
Average Persons Per Dwelling Unit
3.46 ± 0.01▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



- bachelor units
- one bedroom
- two bedrooms
- three bedrooms
- four or more bedrooms

Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	2.62	3.36	4.08	3.46
Standard error	-	-	±0.04	±0.01	±0.03	±0.01
Number of cases	0	0	426	5523	1415	7364
Percentage of cases	0	0	6	75	19	100

✱ *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 3: single detached dwelling units

3.2 mature suburban areas

RF1

In Mature Suburban Areas, most single detached dwellings were constructed during the 20 year period, 1951-1971. The beginning of the period marked the replacement of wholesale use of the grid street pattern with the curvilinear pattern characteristic of modern subdivisions. By the end of the period, residential development planning was carried out on a community scale, as was the case with the Londonderry and Steele Heights Plan Areas.

Single detached dwellings constitute the majority of dwelling units in Mature Suburban Areas. Most units are still well within their normal structural life expectancy and redevelopment pressures are generally not present. Most units are in RF1 Land Use Districts although, in some instances, redevelopment Land Use Districts are in place.

The average size of households occupying single detached dwellings in Mature Suburban Area, RF1 Land Use Districts is 3.21 PPDU. With a sample size of 8,064 units, the sample average is, at a 95% confidence level, within ±0.02 PPDU of the true average for this sub-population.

Single detached dwellings in Mature Suburban Areas are reported to be three bedroom units in 63% of all cases. Another 24% contain four or more bedrooms. These three and four bedroom units, 87% of the total, are suited to family and group type households. Of the remaining dwelling units, 12% have two bedrooms and only 1% have one bedroom. There are, therefore, a small proportion but a substantial number of units suited to small households.

There is a close relationship between average PPDU and the number of bedrooms in a dwelling unit. The household size increases from 1.55 PPDU, in one bedroom units, to 3.82 PPDU in four or more bedroom units. The ratio of persons to number of bedrooms drops substantially from 1.55 and 1.06 in two and three bedroom units to less than 0.96 persons per bedroom in four or more bedroom units.

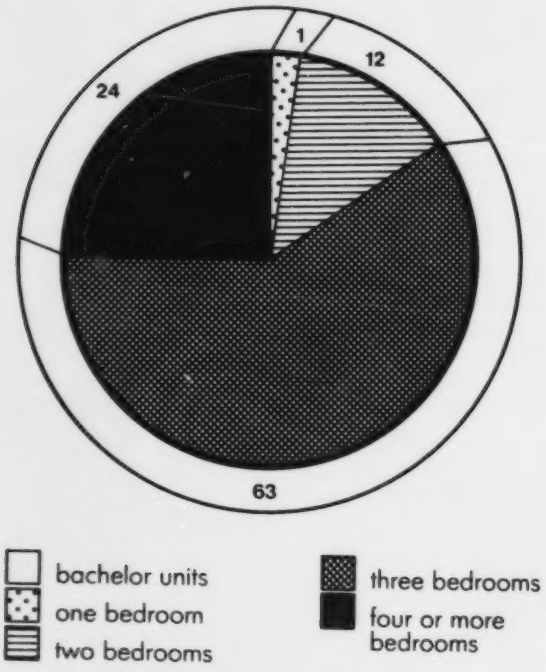
part 3: single detached dwelling units

3.2 mature suburban areas

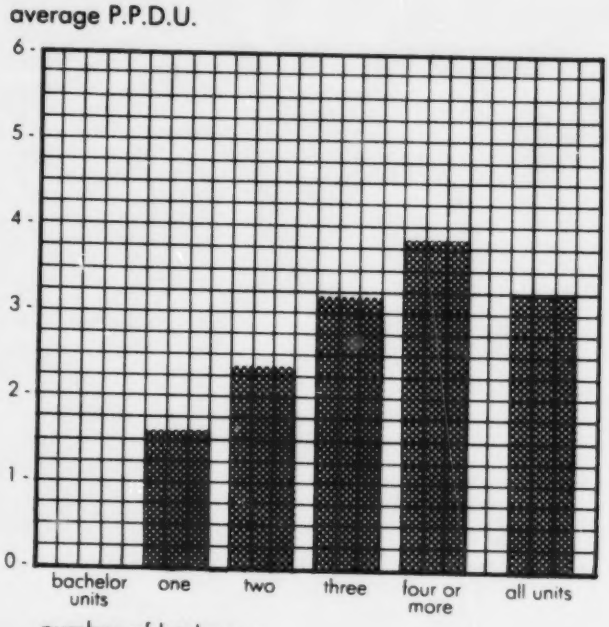
Land Use District
RF1

Average Persons Per Dwelling Unit
3.21 ± 0.01▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	1.55	2.31	3.18	3.82	3.21
Standard error	-	±0.08	±0.03	±0.01	±0.02	±0.01
Number of cases	0	96	955	5094	1919	8064
Percentage of cases	0	1	12	63	24	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲two standard errors provides 95% confidence level.

part 3: single detached dwelling units

3.3 older neighbourhoods and city centre

RF1

Areas of Edmonton that developed prior to 1950 include downtown Edmonton, Strathcona, Jasper Place, Beverly and other nuclei of development with associated surrounding incremental growth. These areas are generally characterized by a grid street pattern. While almost all of the single detached dwellings in these areas are at least 30 years old, a great many units are much older. The most stable of these areas, whether due to quality of housing stock, relatively recent development in comparison with other Older Neighbourhoods or the absence of redevelopment pressure, have been designated under RF I Land Use Districts.

The average size of households occupying single detached dwellings in RF I Land Use Districts in Older Neighbourhoods and the City Centre is 2.61 PPDU. With a sample size of 3,355 units, the sample average is, at a 95% confidence level, within ±0.04 PPDU of the true average PPDU for units in this sub-population.

Three bedroom units make up 49% and four or more bedroom units an additional 12% of the single detached units in RF I Older Neighbourhoods and the City Centre. Compared with newer areas of the city, this area has a high proportion of single detached dwellings with two bedrooms (35%) and one bedroom (4%). These smaller units are suited to the accommodation requirements of small households. This factor acts to bring the overall average PPDU well below that found in other areas of the city. Nevertheless, 61% of the single detached units in these areas have the capacity to accommodate larger households which require three or more bedrooms.

When compared with other areas of the city, the accommodation capacity of single detached dwellings in Older Neighbourhoods and the City Centre is underutilized. For the three and the four or more bedroom categories the ratio of persons to bedroom is 0.95 and 0.86 respectively. The ratio for one and two bedroom units is 1.43 and 1.08 respectively. These values are low by comparison with more recently developed areas. Decreased levels of utilization of the residential capacity have been reflected, over the past several years, in decreasing populations in central areas of the city.

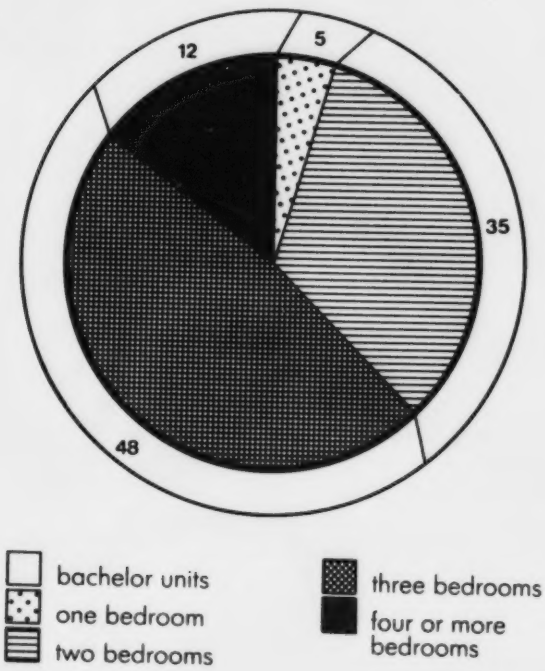
part 3: single detached dwelling units

3.3 older neighbourhoods and city centre

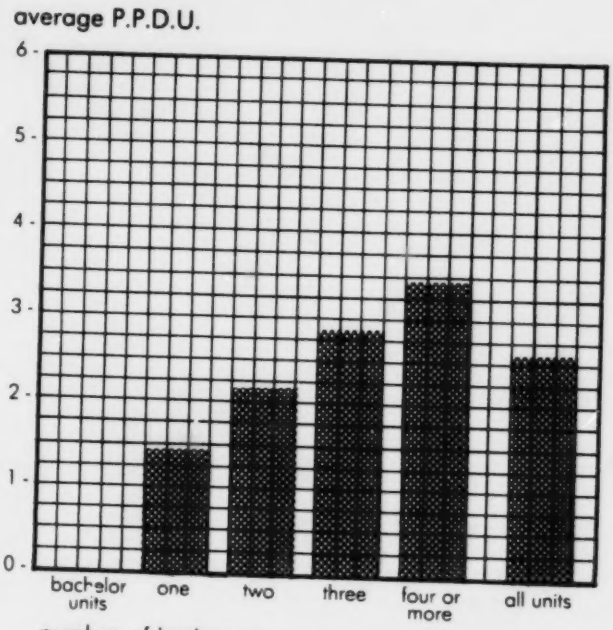
Land Use District
RF1

Average Persons Per Dwelling Unit
2.61 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	1.43	2.16	2.84	3.43	2.61
Standard error	-	±0.06	±0.02	±0.02	±0.05	±0.02
Number of cases	0	148	1184	1622	401	3355
Percentage of cases	0	5	35	48	12	100

* *insufficient cases for calculation of reliable average P.P.D.U.*
▲ *two standard errors provides 95% confidence level.*

3.4 older neighbourhoods and city centre

RF2, RF3, RA7 & DC3

Substantial portions of Older Neighbourhoods and the City Centre, originally developed as areas of single detached housing, are subject to infill, conversion and redevelopment influences. Often housing structures in these areas are at or near the end of their normal structural life expectancy and are replaced by semi-detached, duplex, row house or apartment structures. In other cases, original development has left spaces that are usable for new development. Also, the strategic location of some properties, relative to commercial areas and transportation nodes, has made future high density development desirable. These areas have been designated as: RF2 -Low Density Infill, RF3 - Low Density Redevelopment, RA7 - Low Rise Apartment and DC3 - Temporary Holding Districts. When applied to properties with existing single detached dwellings, these land use designations may be considered to be infill and redevelopment districts.

The average PPDU figure of 2.52 for households occupying single detached dwellings in the redevelopment districts is only slightly below that for RF1 units in Older Neighbourhoods and the City Centre. With a sample size of 6,053 units, the sample average is, at a 95% confidence level, within ±0.04 PPDU of the true average for units of this sub-population. While the household size difference between this sub-population and RF1 single detached dwellings built in the same period is statistically significant, it is negligible for most practical purposes.

Of interest is the substantial difference in the mix of single detached units by number of bedrooms between the redevelopment districts and other areas of the city. Slightly more than half or 51% of the dwellings are two bedroom units. An additional 9% of dwellings have one bedroom. Only 40% of the single detached dwellings in redevelopment areas have three, four or more bedrooms. This pattern is a reversal of the number of bedroom mix typical of areas of the city in RF1 Land Use Districts. It indicates that a good deal of single detached unit accommodation in infill and redevelopment areas consists of dwellings smaller and conceivably less oriented towards family and group type households then are dwellings currently in RF1 Land Use Districts.

In Older Neighbourhoods and the City Centre, for all number of bedrooms categories, the number of persons per bedroom is higher in the redevelopment districts than in RF1 Land Use Districts. Nevertheless, for the three and four or more bedroom categories the average number of persons per bedroom is less than one. Here again, decreasing levels of utilization of the residential capacity of housing in the built-up areas of the city are reflected in decreasing residential population in Older Neighbourhoods and the City Centre.

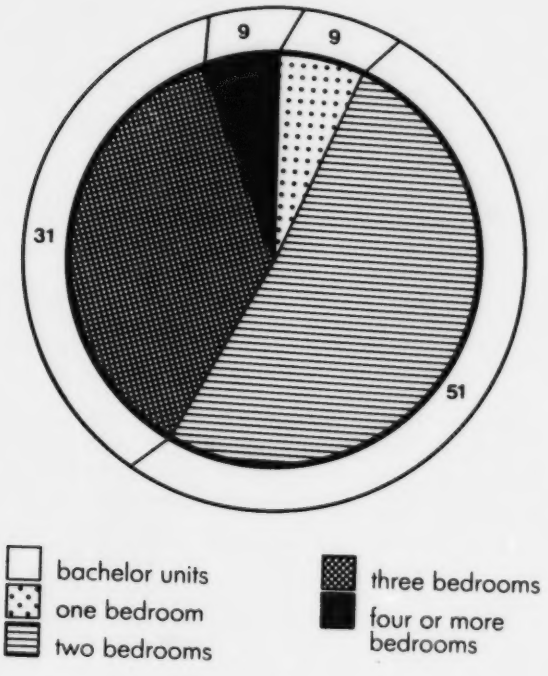
part 3: single detached dwelling units

3.4 older neighbourhoods and city centre

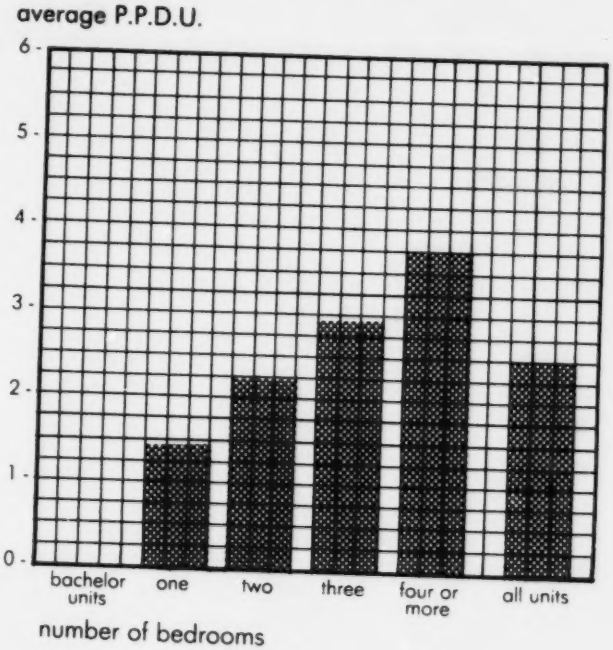
Land Use District
RF2, RF3, RA7 & DC3

Average Persons Per Dwelling Unit
2.52 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	1.46	2.25	2.95	3.75	2.52
Standard error	-	±0.04	±0.02	±0.03	±0.08	±0.02
Number of cases	0	550	3102	1882	519	6053
Percentage of cases	0	9	51	31	9	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

3.5 household type profiles

A commonly held belief is that single detached dwellings in ASP Areas are largely inhabited by young couples, particularly young couples with children. The household profile indicates that this is probably true. 24% of all households consist of a pair of adults and 55% a pair of a adults with one or more children 17 years of age or under. Of interest is the observation that single detached dwellings in ASP Areas are the only category of housing in which households consisting of a pair of adults and one or more children 17 years of age or less (i.e. a household structure suggesting the "typical" nuclear family) comprise more than half (55%) of all households.

Households with children and one or more adults comprise 66% of all single detached dwelling households sampled in ASP Areas. It is these family households that generate the relatively high average PPDU values measured in ASP Areas. Households with one adult and one or more children, a configuration suggesting a single parent household, are, at 1% of the total, uncommon. Most childless households consist of pairs of adults (24%) with only 3% consisting of single adults and 7% consisting of three or more adults.

Single detached dwellings in Mature Suburban Areas are much less likely to house children than are dwellings in newly developed areas. Households with two adults and one or more children 17 years of age or less comprise 32% of households. Together, when single adult with children households (2%) and households with three or more adults plus children (10%) are considered, 44% of all households include children 17 years of age or less. Part of this difference between new suburbs and mature suburbs is due to the process of household aging. 18% of households in Mature Suburban Areas consist of three or more adults 18 years of age and over with no younger children. A good proportion of these households consist of one or two parents plus one or more of their adult "children" who are 18 years of age and over and who have not moved out on their own.

The importance of one and two person households in Mature Suburban Area single detached dwellings is evident in the 8% single adult and 30% adult pair households. The underlying demographic factors behind this distribution include household aging which results in older adults remaining in their homes after their children have left or a spouse has died. Another factor may involve locational choice by adult singles and pairs without children who prefer to live in suburban single detached units with easy access to downtown areas. The result of the higher concentration of adult singles and pairs in more mature suburbs, as compared with households in ASP Areas, is an average PPDU somewhat below that found in the newer areas.

The factors behind comparatively small average household size in single detached dwellings in Older Neighbourhoods and the City Centre is evident from the household profile. 20% of households consist of one-adult households and 38% of two-adult households without children. An additional 15% of households consist of three or more adults with no children. Only 27% of households include children.

The process of household aging observed with the progression of household profiles from ASP Areas to Mature Suburban Areas is repeated over the transition from Mature Suburban Areas to Older Neighbourhoods. Substantial numbers of one and two adult households involve older people whose children have moved away. However, a second factor, occupancy of a house by younger adult singles or pairs who are most interested in accommodation close to the downtown area, undoubtedly plays a significant role. The overall result is a low average size of households occupying single detached units in Older Neighbourhoods and the City Centre.

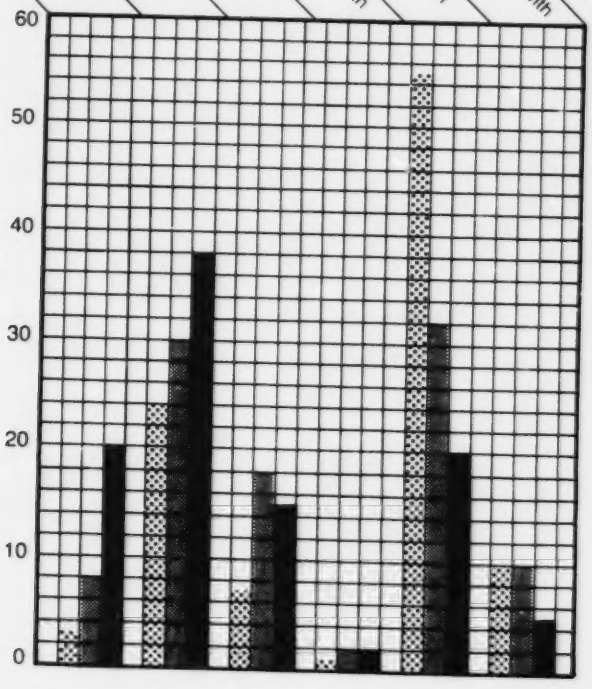
part 3: single detached dwelling units

3.5 household type profiles

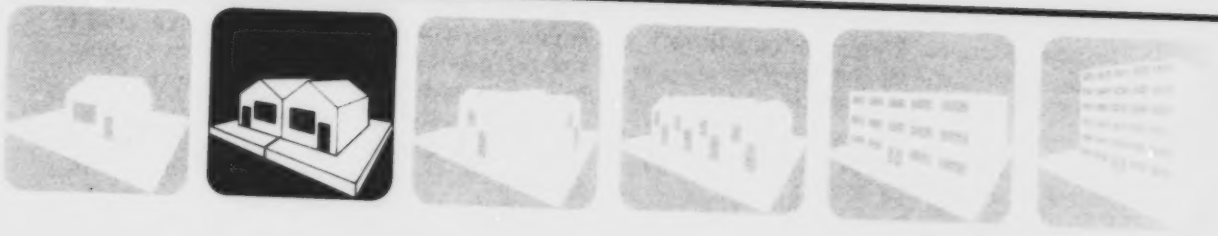
area legend

household types

	single adult	adult pair	adult group	single adult with children	adult pair with children	adult group with children	N = Sample Size
Area Structure Plan Areas	3%	24%	7%	1%	55%	10%	N = 7364
Mature Suburban Areas	8%	30%	18%	2%	32%	10%	N = 8064
Older Neighbourhoods and City Centre	20%	38%	15%	2%	20%	5%	N = 9408



part 4: semi-detached dwelling units



part 4: semi-detached dwelling units

4.1 area structure plan areas

RF4

The majority of semi-detached dwellings in Edmonton have been built in the ASP Areas within the past decade. They are the primary housing type in RF4 - Semi-detached Residential Districts. Semi-detached dwellings have many of the characteristics of single family dwellings except that they adjoin one adjacent unit by means of a common wall. Lot lines pass through the common wall. This design feature reduces construction costs by replacing two outside walls with one party wall and permits development on small lots by removing the need for a side lot. With respect to interior living space, semi-detached dwellings are prone to be similar to small and mid-sized single detached dwellings.

The average size of households occupying semi-detached dwellings in ASP Area RF4 Land Use Districts is 3.32 PPDU. With a sample size of 468 dwellings, the sample average is, at a 95% confidence level, within ±0.12 PPDU of the true average for the sub-population.

The mix of semi-detached dwellings, by number of bedrooms, indicates that the three bedroom unit, representing 84% of all units, is the standard unit size. Only 4% of the units are larger with four or more bedrooms while the remaining 12% have two bedrooms.

The smaller average household size found in semi-detached units, in comparison with single detached units, is directly related to the difference in the number of bedrooms mix. For two and three bedroom unit categories, the average PPDU, 2.63 and 3.37, is almost the same as the corresponding categories for single detached units. The difference reported for the four or more bedroom category (4.30) is, for statistical purposes, not substantial. In other words, in ASP Areas, the number of bedrooms mix characteristics of existing semi-detached units is closely related to the difference in average PPDU for households in semi-detached and single detached dwellings.

In all number of bedrooms categories of semi-detached dwellings, there is, on average, more than one person per bedroom. The ratio decreases from 1.33 for two bedroom units through 1.12 for three bedroom units to 1.08 for four or more bedroom units.

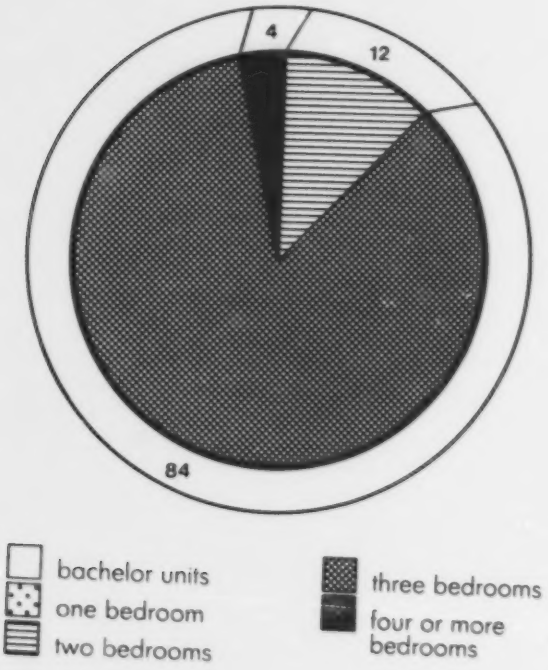
part 4: semi-detached dwelling units

4.1 area structure plan areas

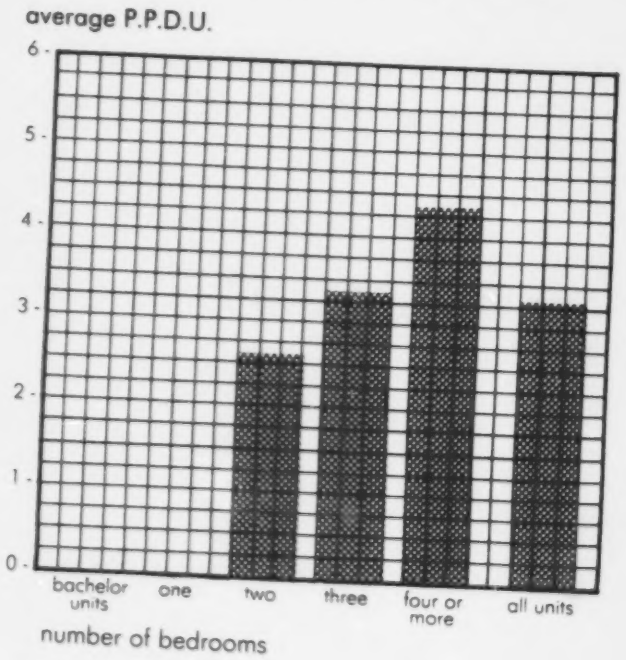
Land Use District
RF4

Average Persons Per Dwelling Unit
3.32 ± 0.06▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.63**	**3.37**	**4.30**	**3.32**
Standard error	-	-	±0.17	±0.07	±0.29	±0.06
Number of cases	0	0	54	394	20	468
Percentage of cases	0	0	12	84	4	100

* *insufficient cases for calculation of reliable average P.P.D.U.*
▲ *two standard errors provides 95% confidence level.*

part 4: semi-detached dwelling units

4.2 mature suburban areas, older neighbourhoods, city centre

all districts

The stock of semi-detached dwelling units in mature, old and central areas of the city is a blend of planned units in RF4 Land Use Districts and infill and redevelopment units in RF2 and RF3 areas. Other semi-detached units are located on sites which have been redistricted for future apartment development. Where semi-detached units are located in RF2 or RF3 Districts they are often more recently built then neighbouring structures and may be contemporaries of units in newer areas of the city.

The average size of households occupying semi-detached dwellings in mature, old and central areas of the city is 3.18 PPDU. With a sample of 241 units, the sample average is, at a 95% confidence level, within ±0.16 PPDU of the true average for the sub-population.

The number of bedrooms mix of semi-detached units in mature, old and central areas is dominated by a 77% proportion of three bedroom units. 12% of the units have four or more bedrooms and 11% have only two.

The average household size in semi-detached dwellings is similar between dwellings in ASP Areas and in the mature, old and central areas. This is due to the counterbalancing effects of a slightly higher proportion of four or more bedroom units coupled with a lower ratio of people to bedrooms for each number of bedrooms category in mature, old and central areas. Interestingly, the average number of persons per bedroom in semi-detached units, particularly in three bedroom units, in the mature, old and central areas is 3.16 PPDU. This is comparable to the figure for single detached dwellings in Mature Suburban Areas (3.18 PPDU). Figures for two bedroom and four or more bedroom categories show a higher ratio of persons per bedroom in semi-detached units. The ratio of number of persons per bedroom decreases from 1.23 for two bedroom units to 1.05 for three bedroom units. For four bedroom units the ratio drops just below 1 to 0.99 persons per bedroom.

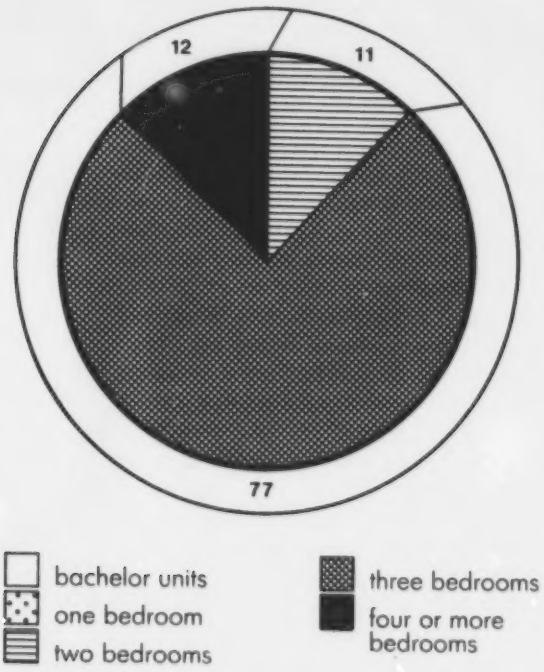
part 4: semi-detached dwelling units

4.2 mature suburban areas, older neighbourhoods, city centre

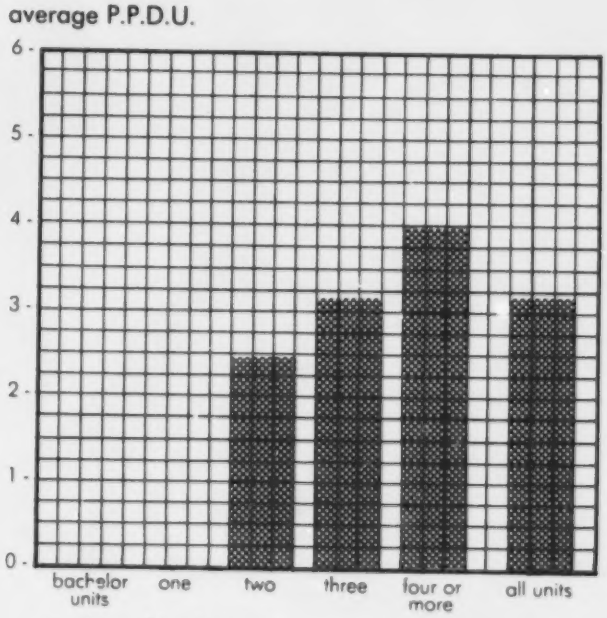
Land Use District
all districts

Average Persons Per Dwelling Unit
3.18 ± 0.08▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.46**	**3.16**	**3.97**	**3.18**
Standard error	-	-	±0.25	±0.09	±0.21	±0.08
Number of cases	0	0	26	186	29	241
Percentage of cases	0	0	11	77	12	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 4: semi-detached dwelling units

4.3 household type profiles

In ASP Areas, the majority, 61%, of semi-detached dwellings are occupied by households with children. 46% of households consist of two adults plus one or more children 17 years of age or less, a composition indicative of a nuclear family. Single parent households, at 5% of the total, represent a higher proportion of households than in single detached dwellings while the proportion of households with three or more adults plus children is the same, 10%, in both detached and semi-detached dwellings.

Adult households without children represent 39% of the households in semi-detached dwellings in ASP Areas. Most of these, 23% of the total, consist of two adults. Single adult households and households with three or more adults each account for 8% of total households.

Overall, the household profile of semi-detached dwellings in ASP Areas is very similar to that for single detached dwellings in the same areas. The key difference is that semi-detached dwellings appear to be more attractive or perhaps more affordable for single parent households and single adult households than are single detached dwelling. Single detached dwellings appear to be more attractive to two adult households with children.

In Mature Suburban Areas, Older Neighbourhoods and the City Centre, 53% of households occupying semi-detached units are all-adult households. However, of the 20% of households with three or more adults a proportion consists of one or two parents with their adult "children," 18 years of age and over. Approximately half of the all-adult households, 27% of the total number of households, consist of two adults. Only 6% involve only a single adult.

Of the semi-detached dwellings in Mature Suburban Areas, Older Neighbourhoods and the City Centre, 35% are occupied by households consisting of two adults and one or more children 17 years of age and under. This figure is lower than that in ASP Areas, a difference due largely to household aging. With 5% of households having one adult and one or more children and 7% having three adults and one or more children, households with children make up 47% of all households.

When semi-detached dwellings in Mature Suburban Areas, Older Neighbourhoods and the City Centre are compared with single detached dwellings in Mature Suburban Areas the household profiles are very similar. Semi-detached units are more attractive to single parent households, two parent households and three or more adult households. Single detached dwellings are more attractive to single adults, adult pairs and three or more adults plus children households. However, in no case is the difference large. Generally, the bulk of stock of semi-detached dwellings in the Mature Suburban Areas, Older Neighbourhoods and the City Centre are located in Mature Suburban Areas in RF4 Land Use Districts. The effects of household aging appear to have been expressed in these areas in a manner very much in accord with the effects of household aging in single detached dwellings in RF1 Land Use Districts in the same areas.

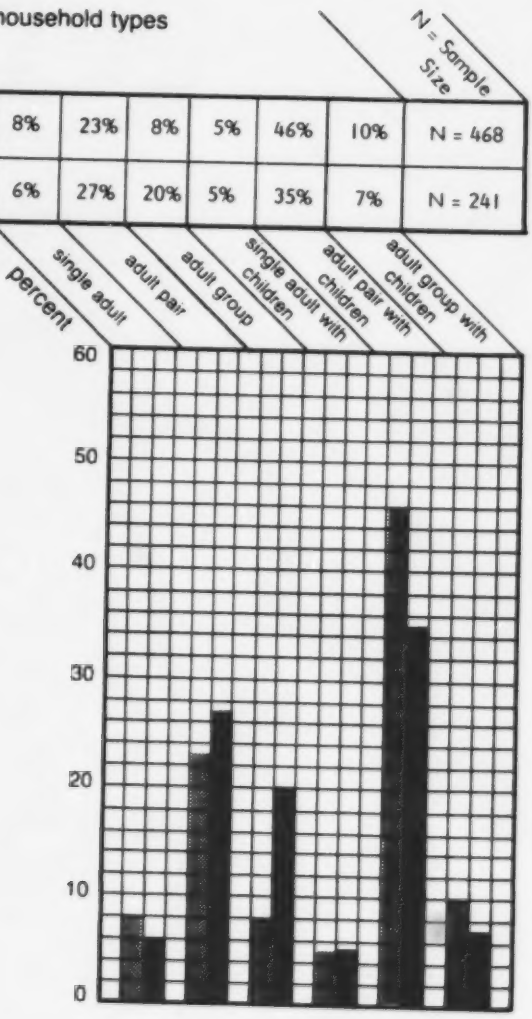
part 4: semi-detached dwelling units

4.3 household type profiles

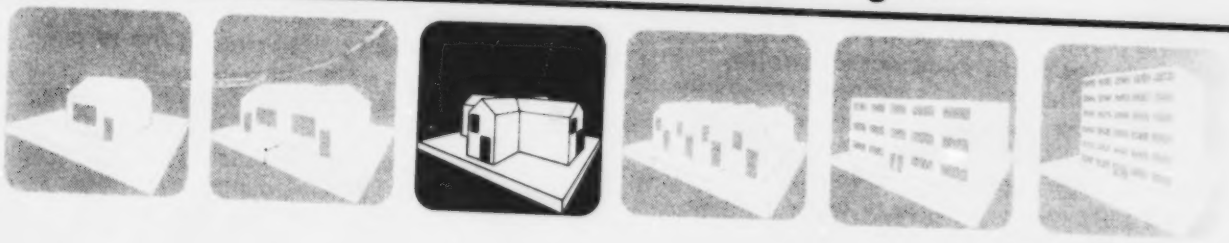
area legend

household types

Area Structure Plan Areas	8%	23%	8%	5%	46%	10%	N = 468
Mature Suburban Areas, Older Neighbourhoods and City Centre	6%	27%	20%	5%	35%	7%	N = 241



part 5: duplex, triplex and fourplex dwelling units



part 5: duplex, triplex and fourplex dwelling units

5.1 duplex dwelling units all areas

all districts

There are approximately 2,500 duplex dwelling units, or 1,250 duplex residential structures, located throughout Edmonton. Duplexes are residential structures originally designed to contain two self-contained dwelling units with separate access. They may be stacked, up and down duplexes or side by side units joined by a party wall. Side by side duplexes are often similar to semi-detached units except that each unit of a semi-detached structure occupies one lot. Both units of a duplex are on a single lot.

Duplex units are a common form of infill and redevelopment residential structure under RF2 and RF3 Land Use Districts. Consequently, duplex units are frequently of a later vintage than other units in their immediate vicinity.

Normally, duplex dwellings are rental units. However, it is not uncommon for duplex owners to reside in one unit of the structure and to rent out the other.

The average size of households occupying duplex dwellings in the City of Edmonton is 2.81 PPDU. With a sample size of 355 units, the sample average is, at a 95% confidence level, within $\pm$0.14 PPDU of the true average of the sub-population.

The majority of duplex dwellings, 59%, are three bedroom units. An additional 8% are four or more bedroom units bringing the total percentage of units suited to family and group type households to 67% of all units. A substantial 33% of duplex dwellings are suited to small households requiring one or two bedroom units. 24% of duplex dwellings have two bedrooms and 9% have only one bedroom.

When duplex dwellings are compared with the housing structures they are most frequently located near (i.e. single detached dwellings in redevelopment areas of Older Neighbourhoods), they tend to have, on average, more bedrooms and, in duplex dwellings, household size is more closely tailored to the number of bedrooms in the unit. One bedroom duplex dwellings average only 1.28 PPDU less than in single detached dwellings. Four or more bedroom units average 3.90 PPDU more than in single detached dwellings in Older Neighbourhoods. The overall effect of the range of average household sizes by number of bedrooms, combined with the difference in number of bedrooms mix, is an average household size for duplex dwellings slightly higher than that for single detached dwellings in Older Neighbourhoods.

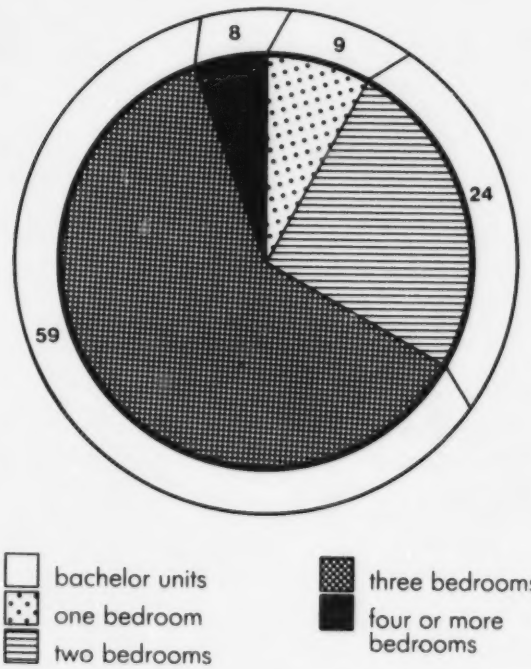
part 5: duplex, triplex and fourplex dwelling units

5.1 duplex dwelling units all areas

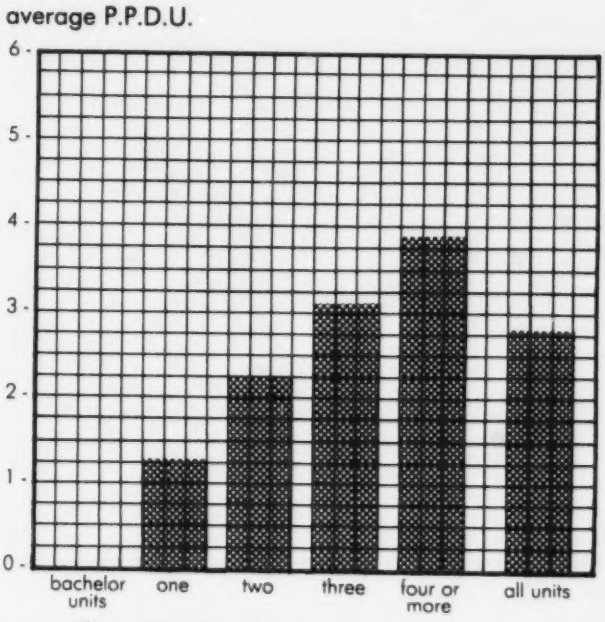
Land Use District
all districts

Average Persons Per Dwelling Unit
2.81 ± 0.07▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	1.28	2.27	3.11	3.90	2.81
Standard error	-	±0.08	±0.11	±0.09	±0.21	±0.07
Number of cases	0	32	86	208	29	355
Percentage of cases	0	9	24	59	8	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲two standard errors provides 95% confidence level.

part 5: duplex, triplex and fourplex dwelling units

5.2 triplex and fourplex dwelling units all areas

all districts

In Edmonton there are approximately 1,000 dwellings in triplex and fourplex residential structures. Most are in Older Neighbourhoods in RF3 Land Use Districts. Triplex and fourplex units come in a variety of forms. They may be stacked or linked row house structures or small apartments. They are often infill or redevelopment residential structures. Consequently, they are often much younger than neighbouring dwellings.

The average size of households in triplex and fourplex dwellings is 2.44 PPDU. With a sample size of 146 units, the sample average is, at a 95% confidence level, within ±0.18 PPDU of the true average for the sub-population.

More than half, 52%, of triplex and fourplex dwellings are small one or two bedroom units, 34% of dwelling units have two bedrooms, 18% have one bedroom. The proportion of dwellings suited to small households is consistent with the number of bedrooms mix of neighbouring older single detached dwellings. A difference is found in the near absence of larger four or more bedroom triplex and fourplex dwellings. At 46%, the most common size of triplex and fourplex dwelling is the three bedroom unit.

Detailed analysis of household size for number of bedroom categories is not appropriate because, within each of the categories, the number of cases is rather small. Nevertheless, it appears that the household sizes are similar to those in single detached dwellings of similar size in older neighbourhoods.

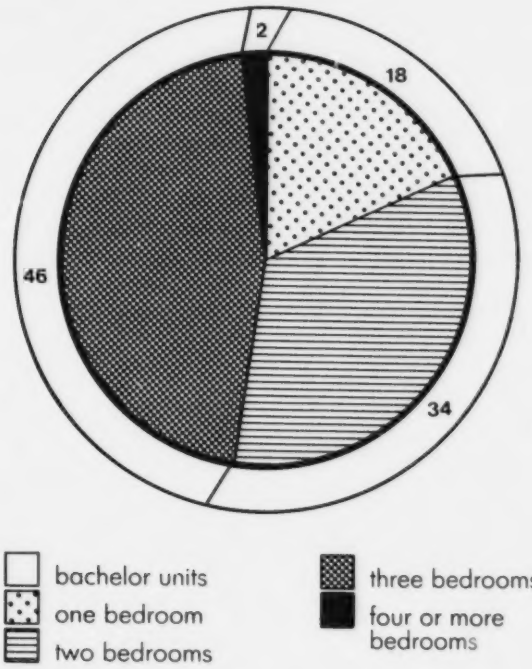
part 5: duplex, triplex and fourplex dwelling units

5.2 triplex and fourplex dwelling units all areas

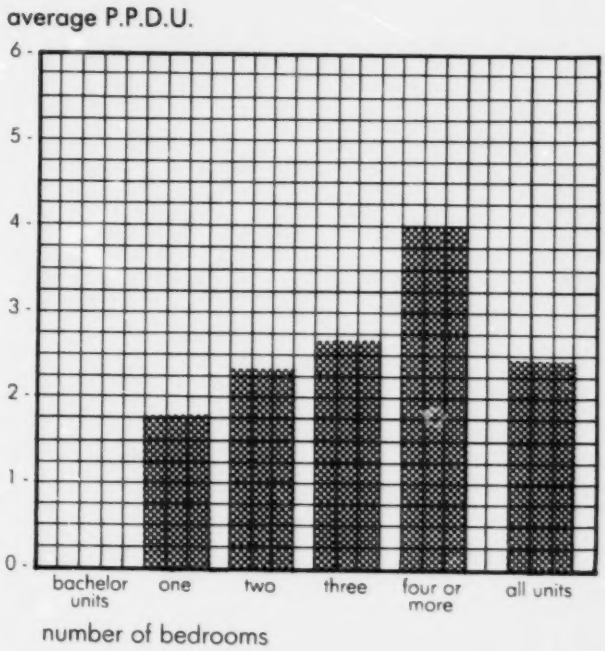
Land Use District
all districts

Average Persons Per Dwelling Unit
2.44 ± 0.09▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	**1.78**	**2.37**	**2.69**	**4.00***	**2.44**
Standard error	-	±0.20	±0.15	±0.14	-	±0.09
Number of cases	0	27	49	67	3	146
Percentage of cases	0	18	34	46	2	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲two standard errors provides 95% confidence level.

part 5: duplex, triplex and fourplex dwelling units

5.3 household type profiles

Households with children comprise 34% of households occupying duplex dwellings. 24% of households in duplex dwellings include an adult pair plus one or more children 17 years of age or less, a configuration typical of nuclear families. 4% of households consist of one adult with one or more children while 6% consist of three or more adults with children.

The majority of households, 66%, residing in duplex units do not include children. Adult pairs are the most common households in duplex dwellings representing 32% of all households. Single adults and groups of three or more adults represent 16% and 18% of households respectively.

Triplex and fourplex dwellings, even more than duplexes, are oriented towards adult households without young children. 76% of households consist of single adults, adult pairs or adult groups. The most common household type, 38%, consists of two adults. Single adults and adult groups of three or more make up 21% and 17% of households respectively.

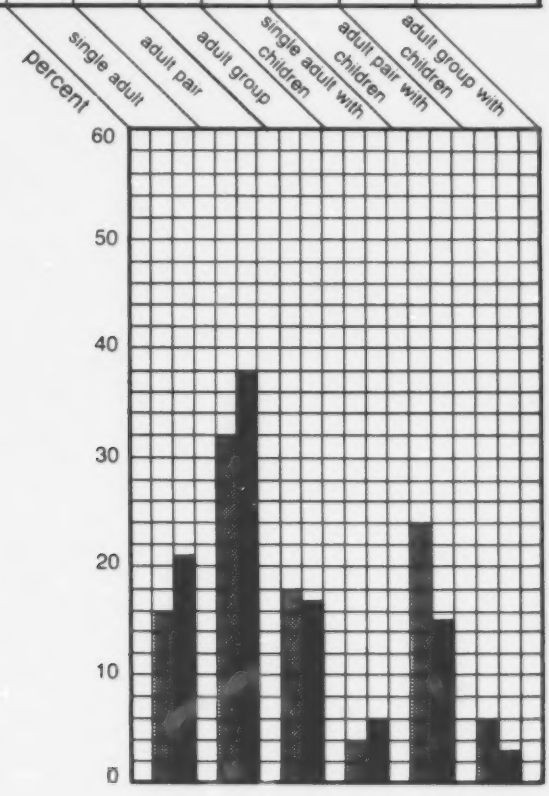
Only 15% of triplex and fourplex households contain two adults with one or more children 17 years of age and under. 6% are single parent households and 3% are households with three or more adults plus children.

Taken together, the household profiles of duplex, triplex and fourplex dwellings are not markedly dissimilar from the profile of single detached dwellings in Older Neighbourhoods. The parallel should not be taken too far, however, the inference is that infill and redevelopment housing of this type does not substantially change the overall household size characteristics of an area even though the structures themselves may be younger than other housing in the vicinity.

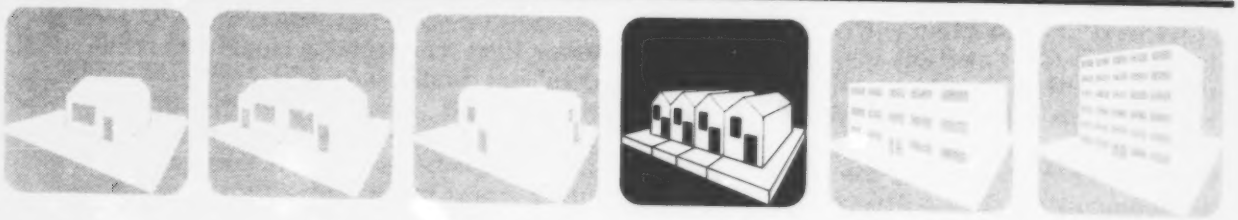
part 5: duplex, triplex and fourplex dwelling units

5.3 household type profiles

area legend	household types						N = Sample Size
All Areas Duplex Dwellings	16%	32%	18%	4%	24%	6%	N = 355
All Areas Triplex and Fourplex Dwellings	21%	38%	17%	6%	15%	3%	N = 146



part 6: row housing dwelling units



part 6: row housing dwelling units rental

6.1 area structure plan areas

RF5

Rental row housing in RF5 Land Use Districts provides accommodation with direct access to ground level in multiple unit residential structures. With direct access to ground level and a unit density restricted to 42 dwellings per hectare, RF5 row housing is generally considered to be the type of multiple unit residential structure most suited to families with children. A large portion of family-oriented social housing in Edmonton is of this type.

In ASP Areas, the average size of households resident in RF5 row housing is 3.17 PPDU. With a sample size of 727 dwellings, the sample average is, at a 95% confidence level, within ±0.10 PPDU of the true average for the sub-population.

A large majority, 80%, of RF5 row housing dwellings are three bedroom units. An additional 5% have four or more bedrooms. Consequently, despite being components of multiple unit structures, row house dwellings are oriented to family and group type households by virtue of number of bedrooms. The very high proportion of three bedroom units indicates that, at the effective date of the data used here, the stock of RF5 row housing in ASP Areas is rather standardized. Nevertheless, two bedroom and one bedroom units comprise 13% and 2% of the stock respectively.

Average household size figures, by number of bedrooms categories, indicate a PPDU value lower than that found in single and semi-detached dwellings in ASP Areas. However, the difference is not large. The ratio of people to bedrooms decreases from a high of 1.39 for one bedroom units through 1.21 and 1.09 persons per bedroom for two and three bedroom units to a low of 1.05 for four or more bedroom units.

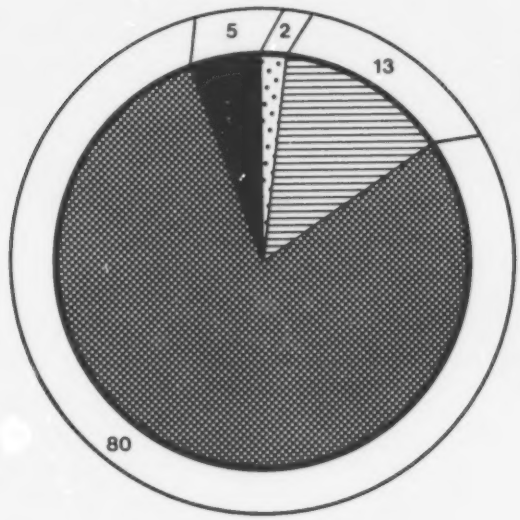
part 6: row housing dwelling units rental

6.1 area structure plan areas

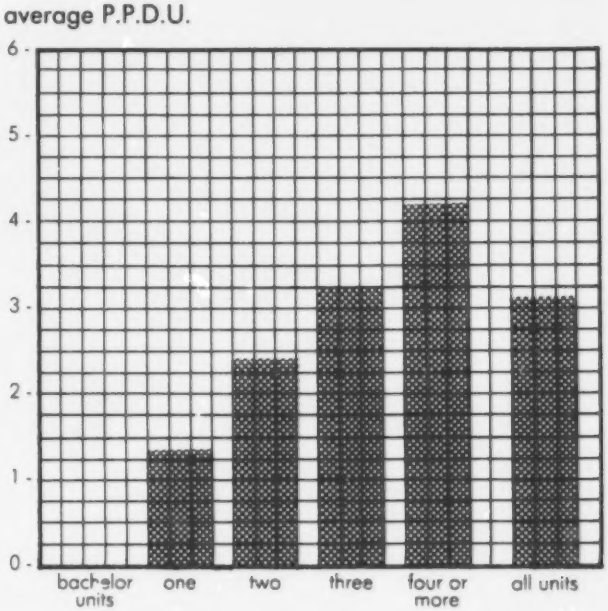
Land Use District
RF5

Average Persons Per Dwelling Unit
3.17 ± 0.05▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	**1.39**	**2.42**	**3.27**	**4.21**	**3.17**
Standard error	-	±0.14	±0.08	±0.05	±0.29	±0.05
Number of cases	0	18	91	580	38	727
Percentage of cases	0	2	13	80	5	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 6: row housing dwelling units rental

6.2 area structure plan areas

RA7

The RA7 Land Use District permits, at 125 dwellings per hectare, a dwelling unit density greater than that normally associated with traditional forms of linked row housing. The development industry has taken advantage of this increased density to produce a variety of forms of stacked row housing under different trade names. In some cases, the distinction between row housing of this sort and walk-up apartments is not clearly apparent due to similarities in the size and bulk of the structures. However, the characteristic of stacked row housing that sets it apart from walk-up apartments is that it permits direct access to ground from all, or most, units without the use of an interior hallway system.

The average size of households occupying rental row housing in RA7 Land Use Districts in ASP Areas is 2.48 PPDU. With a sample size of 339 dwellings, the sample average is, at a 95% confidence level, within ±0.12 PPDU of the true average of the population. The average household size is considerably below that found in any other sample of rental row housing whether in RF5 or RA7 Land Use Districts. In an interesting contrast, average PPDU figures obtained for row housing in Mature Suburban Area, RA7 and RA8 Land Use Districts are much higher than those for ASP Area RA7 Land Use Districts. The difference is related to an underlying difference in the number of bedrooms mix between RA7 and RA8 row housing in ASP Areas and in Mature Suburban Areas.

The majority of dwellings in RA7 row housing structures in ASP Areas have either one bedroom (3%) or two bedrooms (53%). These dwellings are suited to small households. 44% of the dwellings are three bedroom units more suited to larger family or group type households. No four bedroom units were identified in the sample. This number of bedrooms mix falls between the mix normally expected for row housing units and for apartment units.

For three bedroom units, the average PPDU figure corresponds very closely with that reported for RF5, rental row housing in ASP Areas. However, similarities end at that point. Average PPDU figures for one and two bedroom units, 1.17 and 1.93 respectively, are well below levels associated with other examples of row housing used in this study. The range of fluctuation in the persons per bedroom ratio is relatively small moving from 1.17 for one bedroom units to 0.97 for two bedroom units and to 1.09 for three bedroom units.

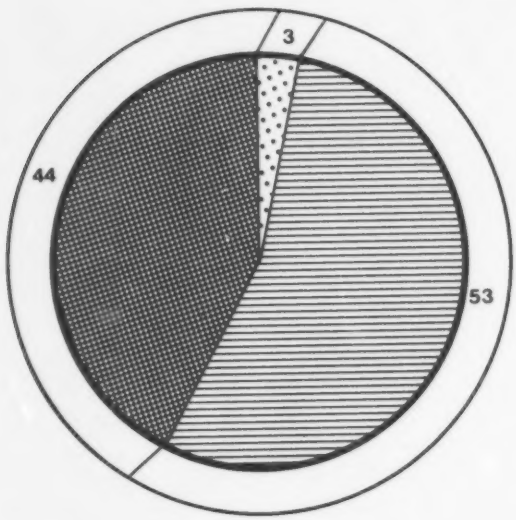
part 6: row housing dwelling units rental

6.2 area structure plan areas

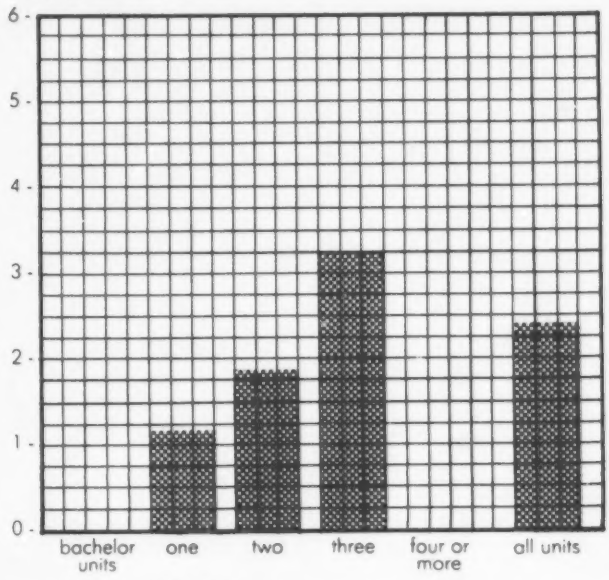
Land Use District
RA7

Average Persons Per Dwelling Unit
2.48 ± 0.06▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	1.17	1.93	3.26	-	2.48
Standard error	-	±0.10	±0.06	±0.10	-	±0.06
Number of cases	0	12	179	148	0	339
Percentage of cases	0	3	53	44	0	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲two standard errors provides 95% confidence level

part 6: row housing dwelling units rental

6.3 mature suburban areas and older neighbourhoods

RF5

In Mature Suburban Area and Older Neighbourhood RF5 Land Use Districts, row housing is mostly rental accommodation. Although in a multiple unit residential structure, row housing units provide direct access to ground level for each dwelling unit. The maximum number of dwellings permitted in the RF5 Land Use District is 42 units per hectare. Generally, row housing structures in Mature Suburban Area and Older Neighbourhood, RF5 Land Use Districts are of the linked row house design. Stacked row housing has been built in higher density Land Use Districts in these areas. In both Mature Suburban Areas and Older Neighbourhoods, row housing is frequently of a more recent vintage than nearby single detached dwellings.

As multiple family residential structures with direct access to ground level for each unit, row housing is the form of multiple family housing considered most suited to the housing needs of families with children. Consequently, a high proportion of social housing, intended for use by families with children, is of row housing design. Social housing programs, where they apply, tend to standardize the household size of families in row housing dwellings on a city-wide basis.

The average size of households in Mature Suburban Areas and Older Neighbourhood row housing dwellings in RF5 Land Use Districts is 3.09 PPDU. With a sample size of 1,632 dwellings, the sample average is, at a 95% confidence level, within ±0.06 PPDU of the true average for the sub-population. A key point is that, when measurements of statistical significance are considered, the average household sizes are not significantly different from that computed for RF5 row housing in ASP Areas.

The number of bedrooms mix of dwellings is less standardized in Mature Suburban Areas and Older Neighbourhoods than in ASP Areas. This may be a factor related to period of development or of market demand perceived by the development industry. For example, all of the one bedroom units in the sample were located in Older Neighbourhoods. This may be a result of an early period of building when units were rather small or it may be the result of specialized marketing directed at single person households. Overall, the most common size of dwellings, at 58% of the total, is the three bedroom unit. Together with the stock of four or more bedroom units, 6%, these units make up 64% of the overall total. They are the dwellings most suited to family and group type households. 33% of the dwellings are two bedroom units and an additional 3% are one bedroom units.

For the four or more bedroom category, RF5 row housing in Mature Suburban Areas and Older Neighbourhoods has the distinction of having the highest person per dwelling unit ratio, 1.26 persons per bedroom, for four or more bedroom units in all types of housing in the study sample. While not as outstanding as the four or more bedroom category, other number of bedrooms categories indicate a reasonably high level of utilization of accommodation capacity at 1.49 persons per bedroom for one bedroom units and 1.19 for two and three bedroom units.

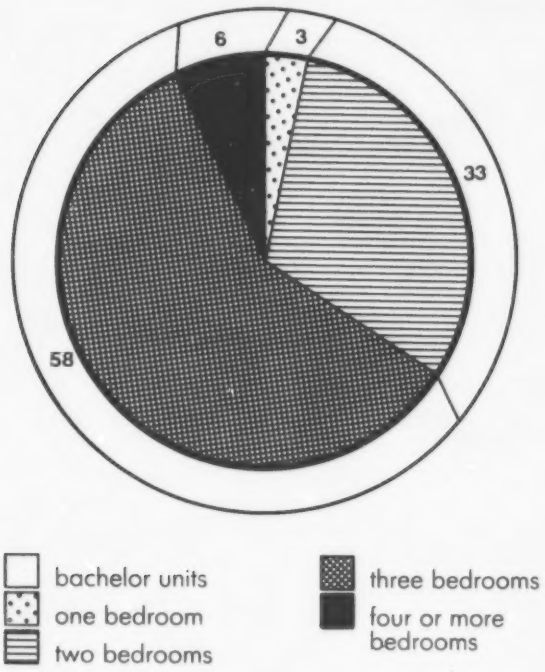
part 6: row housing dwelling units rental

6.3 mature suburban areas and older neighbourhoods

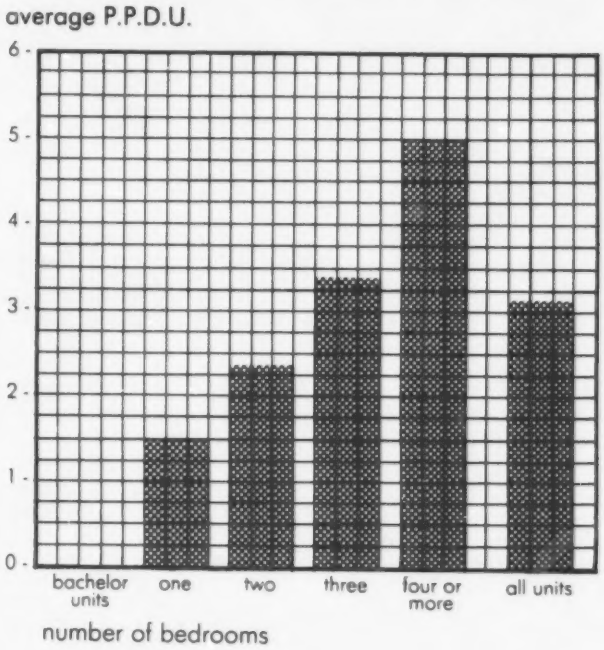
Land Use District
RF5

Average Persons Per Dwelling Unit
3.09 ± 0.03▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	**1.49**	**2.37**	**3.39**	**5.03**	**3.09**
Standard error	-	±0.08	±0.05	±0.04	±0.16	±0.03
Number of cases	0	54	538	932	99	1623
Percentage of cases	0	3	33	58	6	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲ two standard errors provides 95% confidence level.

6.4 mature suburban areas

RA7 & RA8

In Mature Suburban Areas, the RA7 and RA8 Land Use Districts permit development of row housing at a dwelling unit per hectare density much above that permitted in RF5 Land Use Districts. In height and bulk, the row housing structures are often similar to walk-up apartments. The distinction between the two is that row housing structures permit direct access to ground for all, or most, dwellings. The structures that take best advantage of the two properties of direct access to ground and high dwelling unit per hectare densities are some variation of a stacked row housing form.

In Mature Suburban Areas, the average household size for RA7/RA8, rental row housing is 3.27 PPDU. With a sample size of 308 units, the sample average is, at a 95% confidence level, within ± 0.12 of the true average for the sub-population. This average PPDU figure is relatively high for row housing dwellings in general, and is in direct contrast with the low figures obtained for row housing in ASP Area, RA7 Land Use Districts.

The mix of dwellings, by number of bedrooms category, is very standardized with 84% of dwellings having three bedrooms and the remaining 16% having two bedrooms. The sample has none of the large four or more bedroom row housing units found in RF5 Land Use Districts nor is there any indication of the small one bedroom units identified in RA7 Districts in ASP Areas.

On an average PPDU by number of bedrooms category basis, there is a small difference between RF5 and RA7/RA8 row housing in Mature Suburban Areas. The difference in overall average household size is due more to the high proportion of three bedroom units among the RA7/RA8 sample. With an average PPDU for two bedroom units of 2.46, the ratio of people to bedrooms is 1.23. For three bedroom units with an average PPDU figure of 3.42, the people to bedroom ratio is 1.14. These ratios are relatively high when compared with the two and three bedroom categories in other types of dwelling units.

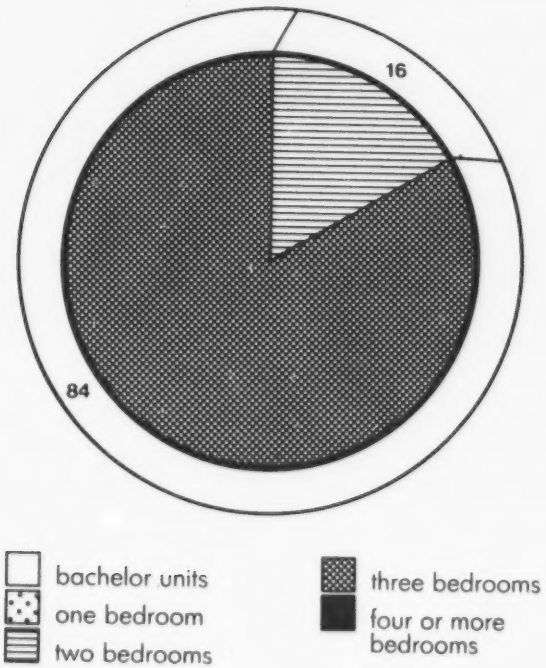
part 6: row housing dwelling units rental

6.4 mature suburban areas

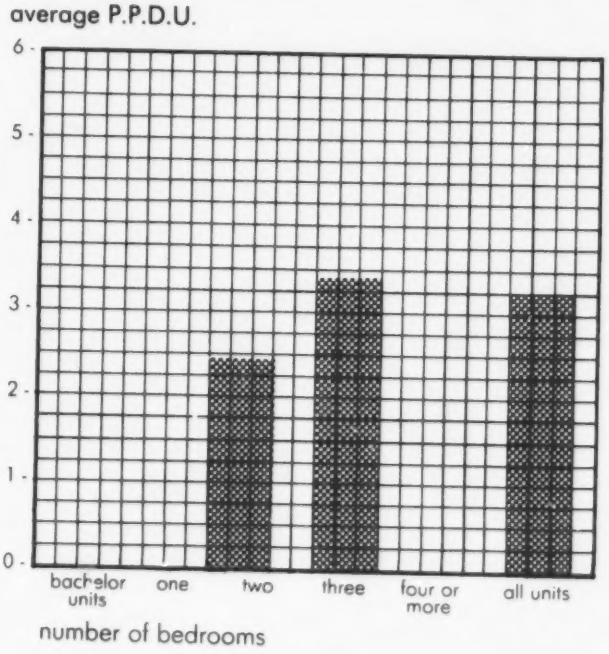
Land Use District
RA7 & RA8

Average Persons Per Dwelling Unit
3.27 ± 0.06▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.46**	**3.42**	-	**3.27**
Standard error	-	-	±0.14	±0.07	-	±0.06
Number of cases	0	0	48	260	0	308
Percentage of cases	0	0	16	84	0	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲two standard errors provides 95% confidence level.

6.5 area structure plan areas

RF5

In the combined ASP Areas, approximately one-quarter of all dwellings are row housing units. The bulk of these, perhaps two-thirds, are condominium units in RF5 Land Use Districts. It should be noted that a substantial minority, approximately one-third, of condominium row housing units are occupied by households which rent from a condominium unit owner. The standard row housing form in the RF5 Land Use District consists of row or linked units. Stacked row housing is generally built at a higher density in other Land Use Districts.

Condominium row housing provides an opportunity for individuals to own a home but, at the same time, to make use of facilities or services purchased in common. Condominium row housing is generally less expensive to buy than single or semi-detached housing and there is less "around the home" maintenance required. With direct access to ground level and access to recreational facilities, condominium row housing is reasonably well suited to the needs of families with children. Due to price considerations, condominium row housing is a common form of "starter home" for young families just entering the housing market. Also, condominium dwellings provide an opportunity for investors to purchase and rent-out individual units in a multiple unit structure.

In ASP Areas, the average size of households in RF5 condominium row housing is 2.93 PPDU. With a sample size of 2,344 dwellings, the sample average is, at a 95% level of confidence, within $\pm$0.04 PPDU of the true average of the sub-population. For condominium row housing throughout the city, the average household size of 2.93 PPDU is reasonably representative (i.e. other sub-populations have similar average household sizes when standard error values are considered).

The number of bedrooms mix of dwellings indicates a preponderance of three bedroom units (91%). The remaining 9% are split roughly equally between two bedroom and four or more bedroom units. The high frequency of three bedroom units is apparently a design feature common to condominium row housing in the city generally.

Compared with single and semi-detached dwellings and RF5 rental row housing in ASP Areas the accommodation capacity afforded by ASP, RF5 condominium row housing is underutilized. For two bedroom units, the ratio of people to bedrooms stands at 1.17. However, in the principal category of three bedroom units, the people per bedroom ratio falls to 0.97 and remains there for four or more bedroom units.

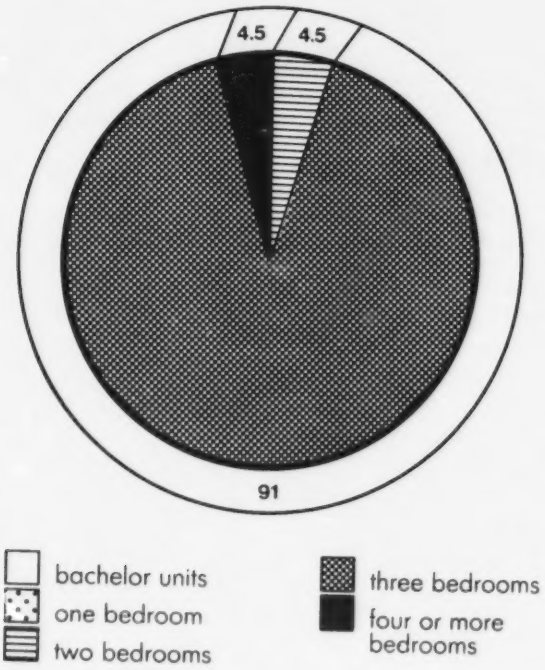
part 6: row housing dwelling units condominium

6.5 area structure plan areas

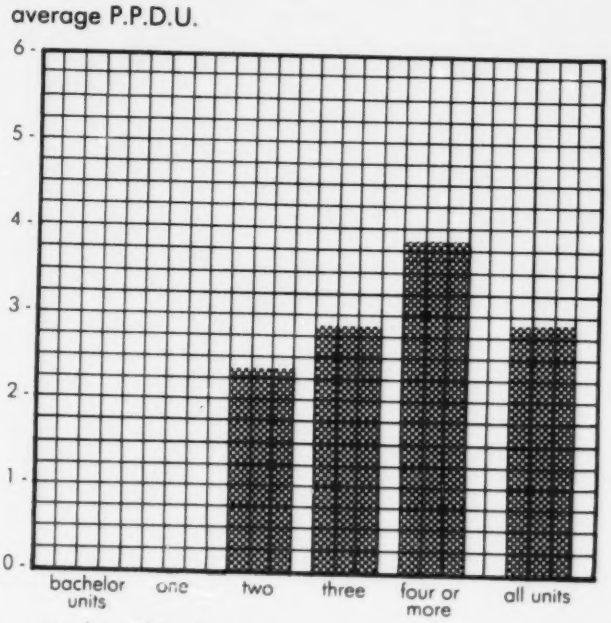
Land Use District
RF5

Average Persons Per Dwelling Unit
2.93 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.33**	**2.91**	**3.86**	**2.93**
Standard error	-	-	±0.09	±0.02	±0.10	±0.02
Number of cases	0	0	108	2126	110	2344
Percentage of cases	0	0	4.5	91	4.5	100

✱ *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

6.6 area structure plan areas

RA7 & RA8

A small portion of the stock of condominium row housing in ASP Areas is in RA7 and RA8 Land Use Districts. Compared to RF5 Land Use Districts, the higher permitted dwelling unit per hectare densities are suited to stacked row housing as well as row and linked structures. RA7/RA8 condominium row housing provides a living environment similar to that associated with RF5 condominium row housing but at a higher residential density. A substantial minority of row housing dwellings are occupied by households renting from a condominium unit owner.

The average size of households occupying condominium row housing units in ASP Area, RA7/RA8 Land Use Districts is 2.88 PPDU. With a sample size of 195 units, the sample average is, at a 95% confidence level, within +0.14 PPDU of the true average of the sub-population. Of note is that despite differences in permitted dwelling unit per hectare densities, the difference between average household sizes in ASP Area condominium row housing dwellings in RF5 and RA7/RA8 Districts is not statistically significant. The reason for this is the high degree of similarity, both with respect to the number of bedrooms mix and the average household size, in each number of bedrooms category.

Three bedroom units comprise 92% of the sample of ASP Area condominium row housing in RA7/RA8 Districts. The remaining 8% are two bedroom units. The larger four bedroom units and smaller one bedroom units are not found in the sample. This distribution reinforces the notion of a relatively standardized range of choice, based on unit size, available to the potential condominium row house purchaser.

Within number of bedrooms categories, there is only a minimal difference in average household size for condominium row housing units in ASP Area, RF5 and RA7/RA8 Districts. The ratio of people to bedrooms is 1.17 for two bedroom units and 0.98 for three bedroom units. It is not wise to attempt a global prediction on the basis of a sample of only 195 units. Nevertheless, there is an indication that, in ASP Areas, differences in permitted row housing dwelling unit densities alone do not affect average household size. Smaller household sizes may occur only when an increase in dwelling unit density is translated into a mix of dwelling units which emphasizes units with one or two bedrooms as opposed to the larger family-oriented three bedroom units.

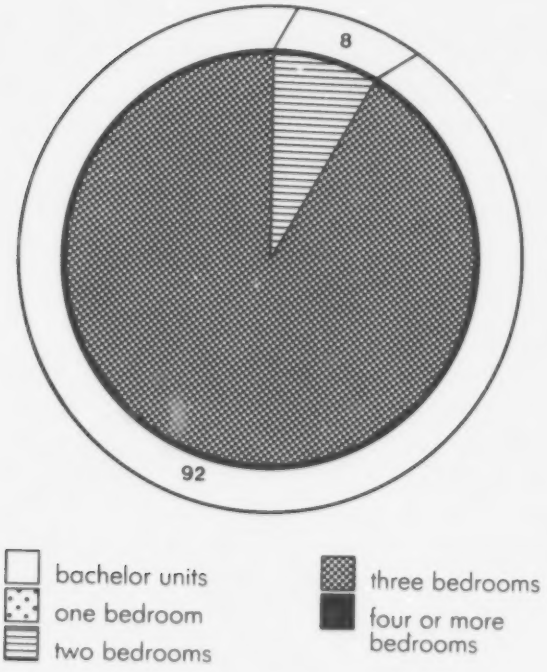
part 6: row housing dwelling units condominium

6.6 area structure plan areas

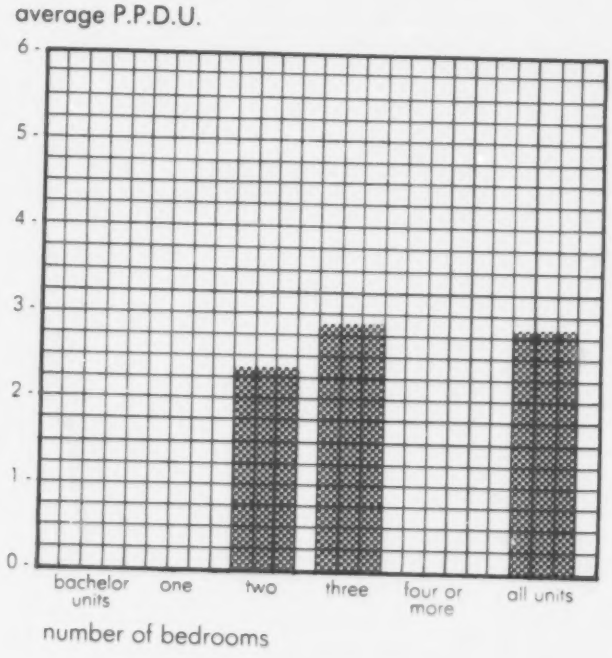
Land Use District
RA7 & RA8

Average Persons Per Dwelling Unit
2.88 ± 0.07▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.33**	**2.93**	-	**2.88**
Standard error	-	-	±0.24	±0.08	-	±0.07
Number of cases	0	0	15	180	0	195
Percentage of cases	0	0	8	92	0	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲ two standard errors provides 95% confidence level.

part 6: row housing dwelling units condominium

6.7 mature suburban areas

RF5

In Mature Suburban Areas, RF5 condominium row housing plays a rather minor role in the overall housing stock compared to rental row housing. This is opposite to the situation in ASP Areas where condominium units predominate among the row housing stock. This situation likely came about because development in Mature Suburban Areas preceded the widespread introduction of condominium ownership. Consequently, the condominium ownership component of the housing stock that is prominent in ASP Areas does not play a large role in Mature Suburban Areas.

Nevertheless, there are sufficient numbers of RF5 condominium row housing units in Mature Suburban Areas to warrant our interest. They provide opportunities for home ownership coupled with common ownership and purchase of facilities and services. As residential structures, RF5 condominium row housing units provide direct access to ground level in a multiple unit residential structure. They are, therefore, the type of multiple unit residential structure most suited to families with children. Approximately one-third of row housing dwellings are occupied by households which rent from a condominium dwelling unit owner.

In Mature Suburban Areas the average size of households occupying RF5 condominium row house dwellings is 3.24 PPDU. With a sample size of 223 dwellings, the sample average is, at a 95% confidence level, within $\pm$0.20 of the true average for this sub-population. This average is not statistically different from the average reported for RF5 rental row housing in Mature Suburban Areas.

The mix of dwelling units by number of bedrooms for RF5 condominium row housing in Mature Suburban Areas is virtually identical to that for RF5 condominium row housing in ASP Areas. 91% of dwellings have three bedrooms while the remaining 9% is split between two and four or more bedroom units. Here again, as with the overall city's stock of condominium row housing, there appears to be a high degree of concentration of three bedroom units.

The overall average household size for RF5 condominium row housing in Mature Suburban Areas is determined largely by the average household size in three bedroom units. Compared with condominium row housing in ASP Areas, the 3.28 PPDU reported for three bedroom units in Mature Suburban Area RF5 Districts represents a relatively full use of accommodation capacity. The average household size for three bedroom units is similar to that in RA7 condominium row housing in Mature Suburban Areas and is comparable with average household sizes for three bedroom rental row housing units throughout Edmonton. For two and three bedroom units the average number of persons per bedroom is 1.09. For four or more bedroom units it is 0.94 persons per bedroom.

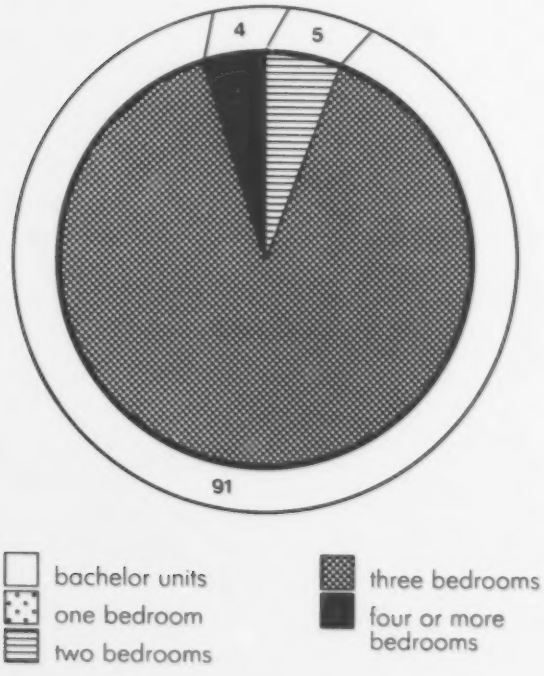
part 6: row housing dwelling units condominium

6.7 mature suburban areas

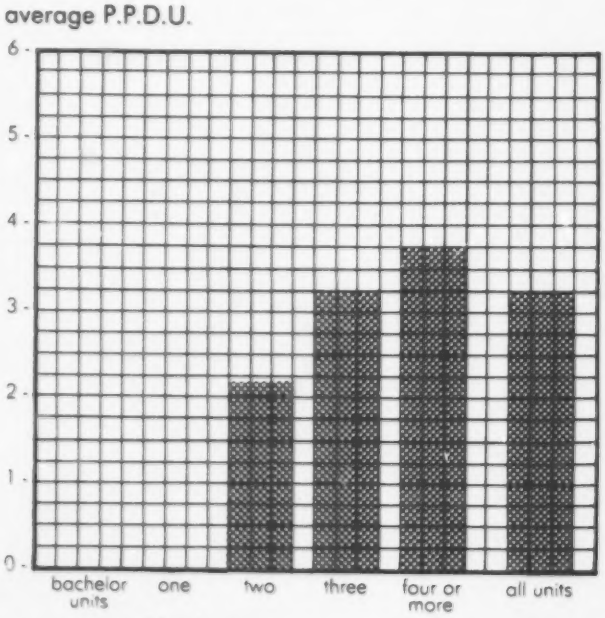
Land Use District
RF5

Average Persons Per Dwelling Unit
3.24 ± 0.10▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.18**	**3.28**	**3.75***	**3.24**
Standard error	-	-	±0.23	±0.10	-	±0.10
Number of cases	0	0	11	204	8	223
Percentage of cases	0	0	5	91	4	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

6.8 mature suburban areas

RA7

The RA7 Land Use District permits development of row housing at a dwelling unit per hectare density substantially above that permitted in RF5 Land Use Districts. This increased density promotes development of stacked row housing in addition to row and linked dwellings. Condominium ownership of these units provides opportunities for home ownership and access to common facilities and services combined with a general reduction in "around the home" maintenance for individual owners. Most condominium row housing units are located in RF5 Land Use Districts in ASP Areas. However, a smaller but still substantial number of units are in RA7 Land Use Districts in Mature Suburban Areas. Approximately one-third of row housing dwellings are occupied by households which rent from a condominium unit owner.

The average size of households occupying RA7 condominium row housing dwellings in Mature Suburban Areas is 3.02 PPDU. With a sample size of 282 units, the sample average is, at a 95% confidence level, within +0.18 of the true average of the sub-population. This average is not different in a statistically significant way from RF5 and RA7/RA8 condominium row housing in ASP Areas. It does, however, vary from the sample average for RF5 condominium row housing in Mature Suburban Areas. The difference is due to a different mix of units by number of bedrooms.

Two bedroom units, representing 29% of the total number of dwellings, play a larger role in the stock of RA7 condominium row housing units than in condominium row housing elsewhere in the city. At 69%, however, three bedroom condominium units remain most common. A small number of units (2%) are reported to have four or more bedrooms. It is the substantial number of two bedroom units in the housing mix which reduces the overall average household size below that for RF5 condominium row housing in the same area.

For three bedroom and four or more bedroom condominium row housing the average household size is the same in both RF5 and RA7 Districts in Mature Suburban Areas. The difference between average PPDU values for two bedroom units is not large nor is it statistically significant.

The ratio of people to bedrooms is 1.17 for two bedroom units, 1.09 for three bedroom units and 0.97 for four or more bedroom units.

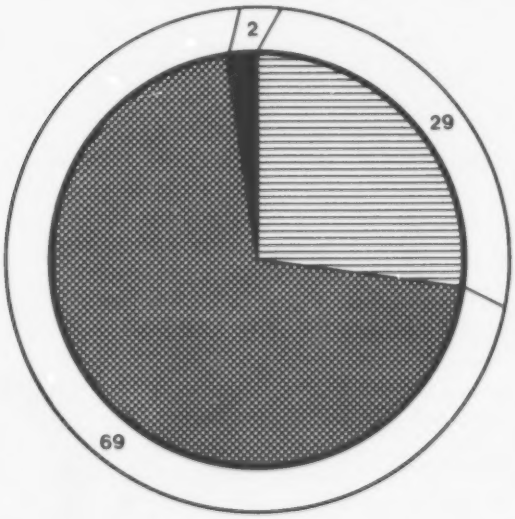
part 6: row housing dwelling units condominium

6.8 mature suburban areas

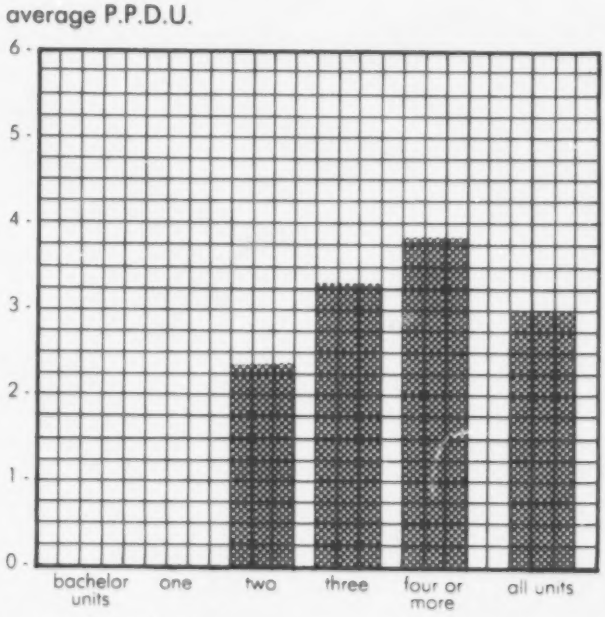
Land Use District
RA7

Average Persons Per Dwelling Unit
3.02 ± 0.09▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	-	**2.33**	**3.28**	**3.86***	**3.02**
Standard error	-	-	±0.12	±0.11	-	±0.09
Number of cases	0	0	61	194	7	282
Percentage of cases	0	0	29	69	2	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 6: row housing dwelling units

6.9 household type profiles

6.9.1 row housing - rental

Household profiles for rental row housing are quite similar between ASP Areas, Mature Suburban Areas and Older Neighbourhoods. This is consistent with similarities in average household size.

An impressive aspect of rental row housing household profiles is the importance of this housing type as a place of residence for families with children and, most particularly, single parents with children. In ASP Areas, 17% of households consist of single parents with children. In Mature Suburban Areas and Older Neighbourhoods, 16% of households are of this type. All types of households with children comprise 58% of households in ASP Areas and 65% of households in Mature Suburban Areas and Older Neighbourhoods. Households with two adults and one or more children 17 years of age or under, a configuration characteristic of nuclear families, make up 36% of households in ASP Areas and 43% in Mature Suburban Areas and Older Neighbourhoods.

The role of rental row housing in providing accommodation for single parent households is determined, to some degree, by public policy. Rental row housing is the type of dwelling most usually associated with social housing programs directed towards families with children. Nevertheless, there is some indication, from the data on condominium row housing, that single parent households opt for row house accommodation even when not induced to do so by social housing programs.

Among childless households, the two adult household is the most common form (22% in ASP Areas and 19% in Mature Suburban Areas and Older Neighbourhoods). In ASP and Mature Suburban Areas, 13% and 10% of households in rental row housing consist of single adults. Adult groups, and adult groups with children each, represent only a small portion (6-7%) of households.

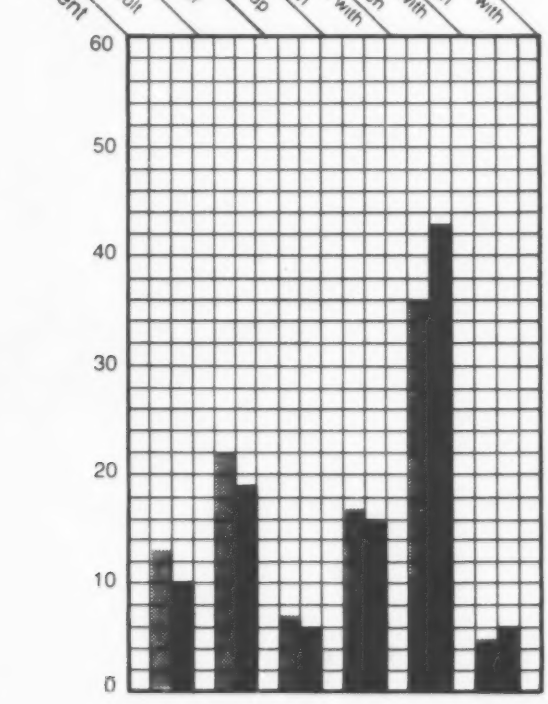
It should be noted that among all rental housing in Edmonton and with the single exception of walk-up apartments in ASP Areas, rental row housing is the only type of multiple unit rental accommodation in which the proportion of adult pairs exceeds the proportion of adult singles. Also, rental row housing is the only form of multiple unit rental housing in Edmonton in which the proportion of households with children exceeds the proportion of childless households. Finally, rental row housing is the form of multiple unit rental housing with the highest proportion, whether through choice or circumstance (i.e. social housing programs), of single parent families. The combination of these factors suggest that rental row housing fills an important niche in the overall supply of rental housing in Edmonton.

part 6: row housing dwelling units

6.9 household type profiles

6.9.1 row housing - rental

area legend	household types						N = Sample Size
Area Structure Plan Areas	13%	22%	7%	17%	36%	5%	N = 1073
Mature Suburban Areas and Older Neighbourhoods	10%	19%	6%	16%	43%	6%	N = 1753



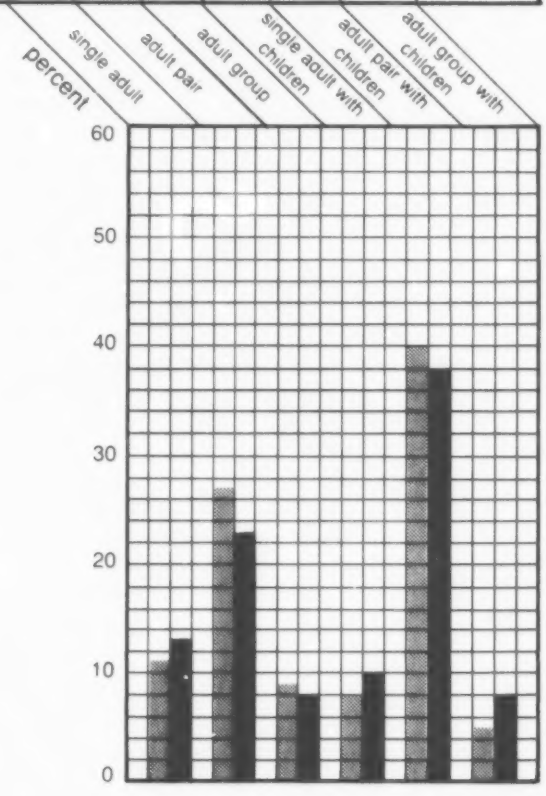
N = 181

part 6: row housing dwelling units

6.9 household type profiles

6.9.2 row housing - condominium

area legend	household types						N = Sample Size
Area Structure Plan Areas	11%	27%	9%	8%	40%	5%	N = 2539
Mature Suburban Areas	13%	23%	8%	10%	38%	8%	N = 505



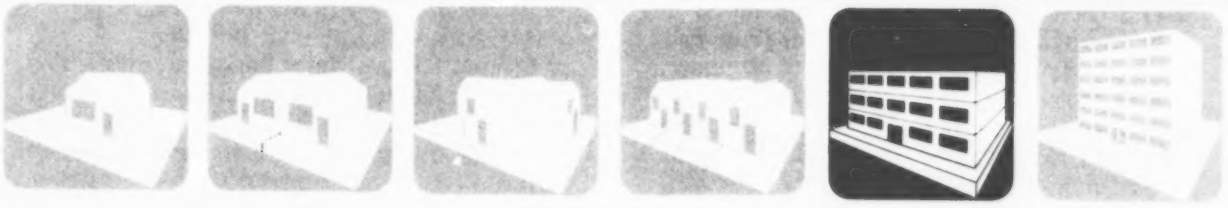
Household profiles for condominium row housing are similar between ASP Areas and Mature Suburban Areas. Parallel similarities were noted for rental row housing. The majority of households in condominium row housing in both ASP Areas (53%) and Mature Suburban Areas (56%) are households with children. Households with two adults and one or more children 17 years of age or less (i.e. primarily nuclear families) make up 40%, in ASP Areas, and 38%, in Mature Suburban Areas, of all households. Single parent families constitute a substantial 8-10% of households in condominium row housing dwellings in these areas.

Overall, as with rental row housing, condominium row housing plays an important part in providing accommodation for households with children. Of multiple unit residential structures, these are the type that stand out as being suited to, and used for, family type accommodation. In no other form of multiple unit residential structure, either rental or condominium, does the proportion of families with children exceed more than about one-quarter of households.

Of households without children, the most common form consists of two adults (27% in ASP areas, 23% in Mature Suburban Areas). Single adults make up between 11% and 13% of condominium row housing households. Adult groups comprise the remaining 8-9% of households.

When condominium row housing household profiles are matched against those of ASP Area single detached dwellings and condominium apartments, they are seen to represent a mid-point between the other two housing forms. The condominium row housing profile shows smaller proportions of households with children than is found in the profile of ASP single detached dwellings but a greater proportion than is found in the profile of condominium apartments. When these relationships are considered along with the very clear differences in average household sizes reported for each housing type, the role of condominium row housing as accommodation for small families, including single parent families, is apparent.

part 7: walk-up apartment dwelling units



part 7: walk-up apartment dwelling units rental

7.1 area structure plan areas

RA7

In ASP Areas, rented apartment accommodation is generally afforded by walk-up apartments. High rise structures have not yet been developed in substantial numbers. The primary Land Use District for walk-up apartment units is RA7 - Low Density Apartment District. Under this Land Use District, a maximum dwelling unit density of 125 dwellings per hectare in a structure four storeys or less is permitted. Often the structures are developed to a density lower than the site permits and they may have two-four storeys. Some low density structures may be similar to stacked row housing units in appearance but are without direct access to ground level from upper storey units.

In ASP Areas, the average size of households occupying for rental walk-up apartment dwellings in RA7 Districts is 2.04 PPDU. With a sample size of 435 dwellings, the sample average is, at a 95% level of confidence, within +0.08 PPDU of the true average of the sub-population. Although this sample average is marginally below that for the same type of dwellings in ASP Area, RA8 Districts, it is significantly above the average household size computed for other categories of rental walk-up apartments. These differences are very closely associated with underlying differences in the mix of dwelling units by number of bedrooms in each category of rental walk-ups. Rental walk-up apartments in ASP Areas in both RA7 and RA8 Districts have a different number of bedrooms mix than rental walk-ups in other areas.

Two bedroom dwellings, at 56%, constitute the majority of units in ASP Area, RA7 rental walk-up apartment buildings. An additional 8% are three bedroom units. This number of bedrooms distribution is similar to that in neighbouring RA8 Districts but these ASP walk-up apartment categories represent the only sub-populations of walk-up apartment dwellings in which the majority of units have two or more bedrooms. In ASP Area, RA7 Districts, 36% of rental walk-up apartments are one bedroom units. No bachelor units were identified in the sample.

Within number of bedrooms categories, the average household sizes for one and two bedroom units, 1.46 PPDU and 2.25 PPDU respectively, are similar to those reported for rental walk-up apartments in Mature Suburban Areas and Older Neighbourhoods. This direct comparison is of interest due to the high proportion of units of these size categories in the overall stock of rental walk-up apartments in the city. Only City Centre apartments show a substantially different average household size for one and two bedroom dwellings.

The ratio of people to bedrooms for one bedroom units is 1.46. For two bedroom units, the ratio drops to 1.13 and it declines slightly to 1.10 persons per bedroom for three bedroom units.

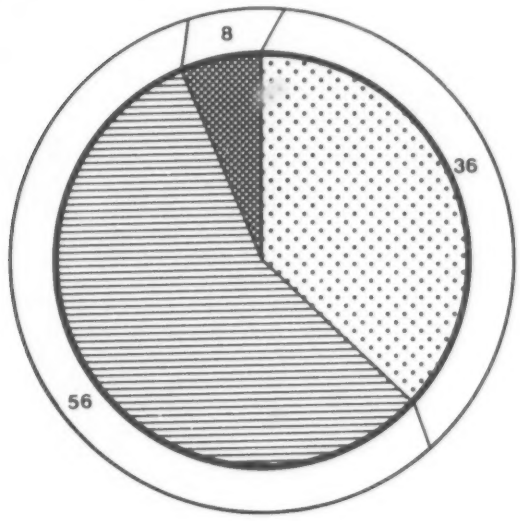
part 7: walk-up apartment dwelling units rental

7.1 area structure plan areas

Land Use District
RA7

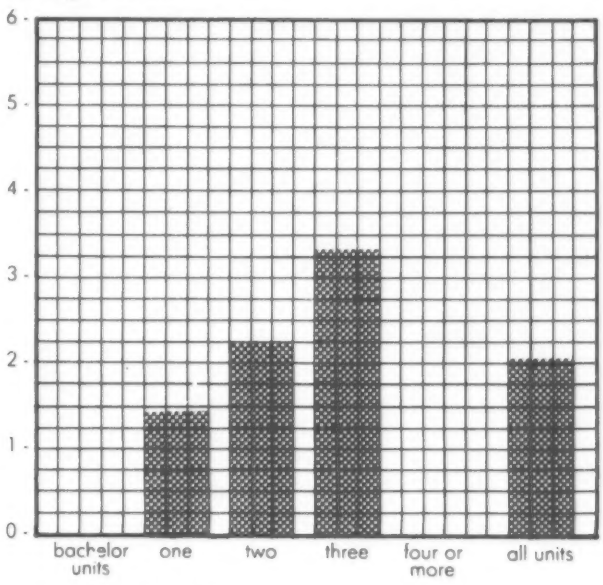
Average Persons Per Dwelling Unit
2.04 ± 0.04▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



bachelor units
one bedroom
two bedrooms
three bedrooms
four or more bedrooms

Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	-	**1.46**	**2.25**	**3.30**	-	**2.04**
Standard error	-	±0.06	±0.05	±0.16	-	±0.04
Number of cases	0	158	244	33	0	435
Percentage of cases	0	36	56	8	0	100

✱ *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

7.2 area structure plan areas

RA8

A portion of the stock of rental walk-up apartment dwellings in ASP Areas has been developed on land districted RA8. The RA8 - Medium Rise Apartment District permits development at a density of 225 dwellings per hectare. Development bonuses are granted where family-oriented dwellings are provided on lower floors. A building height of six storeys above ground is permitted but not obtained for walk-up apartment structures which have a maximum of four storeys. Walk-up apartment structures built under these conditions tend to have greater bulk, but not necessarily greater height, than do walk-up structures in RA7 Districts.

The average size of households occupying rental walk-up apartment dwellings in ASP Area, RA8 Districts is 2.17 PPDU. With a sample size of 247 units, the sample average is, at a 95% level of confidence, within +0.10 of the true average of the sub-population. This average is marginally above that reported for neighbouring units in RA7 Districts. It is, overall, the highest average household size computed for any sample of rental walk-up units. This is directly related to the mix of units by number of bedrooms.

Two bedroom units comprise a 63% majority of dwellings in ASP Area, RA8 rental walk-up apartments. Three bedroom units represent 6% of dwellings. There are no four bedroom units in the sample. At 1%, bachelor units are rare in ASP Area, RA8 Districts. 30% of units have one bedrooms. As with walk-up apartments in ASP Area, RA7 Districts, but unlike the walk-ups in other areas of the city, the majority of units in RA8 Districts have two or three bedrooms. This mix is responsible for the comparatively high average household size for these units and it may indicate that developers are acting on floor area bonus provisions for family-oriented housing.

Within number of bedrooms categories, the average household sizes for two and three bedroom units, 1.52 and 2.33 PPDU respectively, are in the same range as figures reported for other categories of rental walk-ups outside of the City Centre. The average 3.93 PPDU reported for three bedroom units is relatively high indicating the presence of family or group type households. The ratio of people to bedrooms is 1.33 for bachelor units, and 1.52, 1.17 and less than 1.31 for one, two and three bedroom units.

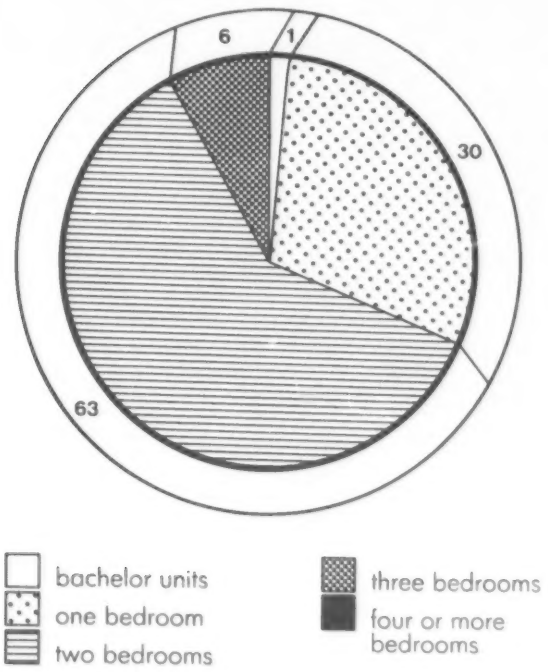
part 7: walk-up apartment dwelling units rental

7.2 area structure plan areas

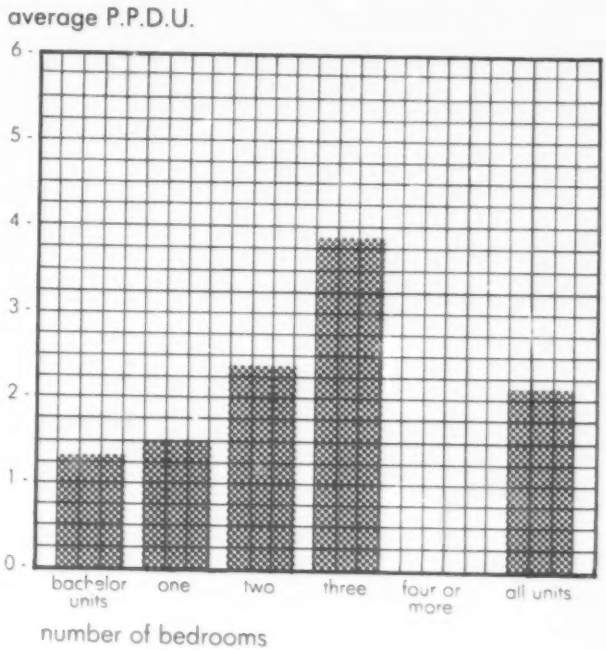
Land Use District
RA8

Average Persons Per Dwelling Unit
2.17 ± 0.05▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	1.33*	1.52	2.33	3.93	-	2.17
Standard error	-	±0.09	±0.06	±0.26	-	±0.05
Number of cases	3	74	155	15	0	247
Percentage of cases	1	30	63	6	0	100

** insufficient cases for calculation of reliable average P.P.D.U.*

▲ two standard errors provides 95% confidence level.

part 7: walk-up apartment dwelling units rental

7.3 mature suburban areas

RA7

In Mature Suburban Areas, rental walk-up apartment structures tend to be clustered around commercial areas and transportation nodes and arteries. Apartment development in these areas does not usually take the form of redevelopment but have often been built considerably later than lower density development in the same neighbourhoods. Most apartment developments in the Mature Suburban Areas are in the form of walk-up apartment structures. High rise structures in these areas are not common. With the introduction of the 1980 Land Use Bylaw (Bylaw #5996), existing walk-up apartments in the Mature Suburban Areas were placed within the RA7 - Low Rise Apartment District category.

The average size of households occupying RA7, rental walk-up apartments in Mature Suburban Areas is 1.91 PPDU. With a sample size of 1,036 units, the sample average is, at a 95% level of confidence, within ±0.06 PPDU of the true average for the sub-population. The average household size is between the higher household size reported in ASP Areas (2.04 PPDU) and the lower one reported for Older Neighbourhoods (1.71 PPDU).

The one bedroom unit is the most common (47%) size of dwelling unit in rental walk-up apartments in Mature Suburban Areas. With bachelor units, at 4%, beginning to play a significant part in the apartment stock, bachelor and one bedroom dwellings constitute a slim majority (51%) of units. At 41%, two bedroom units are less prominent than in ASP Areas. However, they are more abundant than in Older Neighbourhoods or the City Centre. Three bedroom units can be found in Mature Suburban Areas where they represent 8% of all rental walk-up units.

Within number of bedrooms categories, there is little to distinguish rental walk-up apartments in Mature Suburban Areas from those in ASP Areas and Older Neighbourhoods with respect to average household size. The critical categories of one and two bedroom unit have average PPDU values of 1.46 and 2.19 respectively.

The average household size for three bedroom units is, at 3.35 PPDU, not seriously at variance with figures for three bedroom units in other areas. The average household size for bachelor units, 1.45 PPDU, is higher than might be expected. In this sample it is comparable to the computed household size of one bedroom units in the same area. The ratio of people to bedrooms is indicative of a reasonably high degree of utilization of accommodation capacity at 1.45 for bachelor units and 1.46, 1.10 and 1.12 for one, two and three bedroom units.

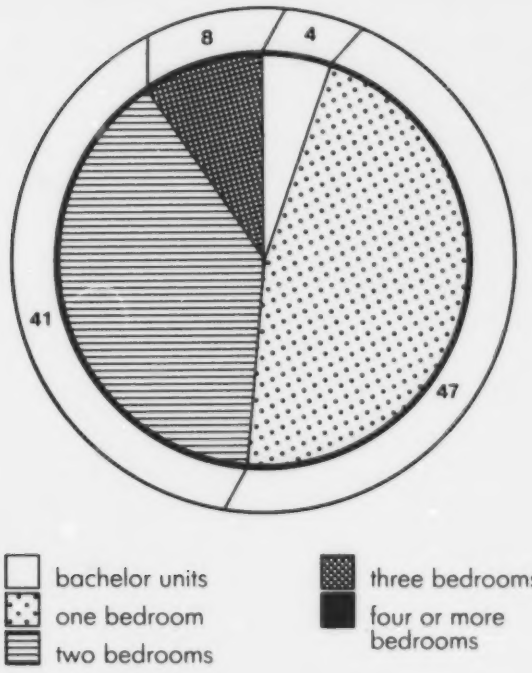
part 7: walk-up apartment dwelling units rental

7.3 mature suburban areas

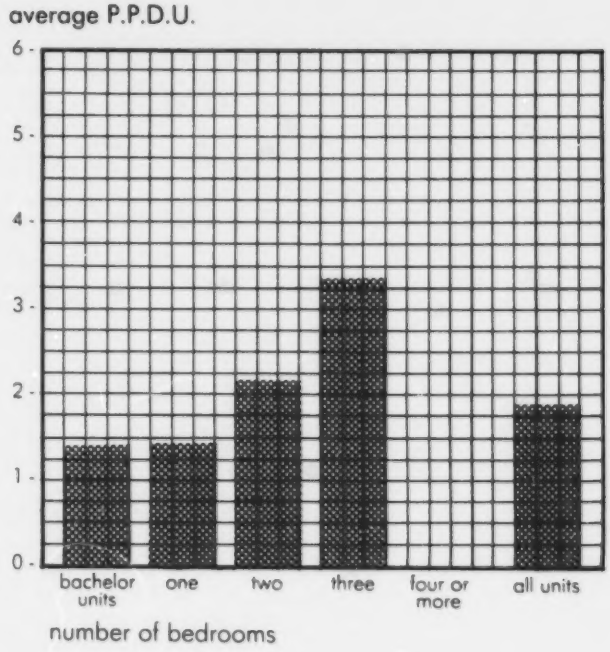
Land Use District
RA7

Average Persons Per Dwelling Unit
1.91 ± 0.03▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	1.45	1.46	2.19	3.35	-	1.91
Standard error	±0.08	±0.03	±0.04	±0.16	-	±0.03
Number of cases	40	489	428	79	0	1036
Percentage of cases	4	47	41	8	0	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 7: walk-up apartment dwelling units rental

7.4 older neighbourhoods

RA7

In Older Neighbourhoods, rental walk-up apartments consist of a combination of structures. Some old buildings were built prior to 1950, a range of new structures has been developed on vacant land since that time. Also, redevelopment, particularly along transportation nodes and arteries, has replaced existing low density housing with rental walk-up apartment structures. As in Mature Suburban Areas and ASP Areas, there are not many examples of high rise apartment structures in Older Neighbourhoods. The vast majority of apartments are walk-ups in the RA7 - Low Rise Apartment District.

In Older Neighbourhoods, the average size of households in RA7 rental walk-up apartment dwellings is 1.71 PPDU. With a sample size of 2,341 dwellings, the sample average is, at a 95% confident level, within +0.04 PPDU of the true average of the sub-population. This sample average continues a pattern of decreasing household size in rental walk-up apartments from ASP Areas through Mature Suburban Areas to Older Neighbourhoods. The decrease is closely related to a change in the underlying mix of dwellings by number of bedrooms.

The majority (61%) of rental walk-up apartment dwellings in Older Neighbourhood, RA7 Districts are one bedroom units. Bachelor units comprise 10% of all units bringing the combined total of bachelor and one bedroom units to 71%. Two bedroom units make up 26%, and three bedroom units 3%, of RA7 rental walk-up apartments. The number of bedrooms mix indicates, for Older Neighbourhood walk-up apartments, a predominance of units suited to one or two person households. Again, this is a continuation of a trend towards small dwelling units from ASP Areas towards the City Centre.

Within number of bedrooms categories, there is little difference in average household sizes for one and two bedroom walk-up apartments in ASP Areas, Mature Suburban Areas and Older Neighbourhoods. In all these areas, average household sizes are similar to the 1.53 PPDU, for one bedroom units, and 2.25 PPDU, for two bedroom units, figures calculated for Older Neighbourhoods. Bachelor units, at 1.13 PPDU, begin to play an increasingly important role in computing the overall average household size. In contrast, three bedroom units, with 2.85 PPDU but only 3% of all units, are relatively unimportant. The ratio of people to bedrooms is 1.13 for bachelor units and 1.53, 1.13 and 0.95 for one, two and three bedroom units. Only in three bedroom units does the accommodation capacity of dwelling units appear to be relatively underutilized.

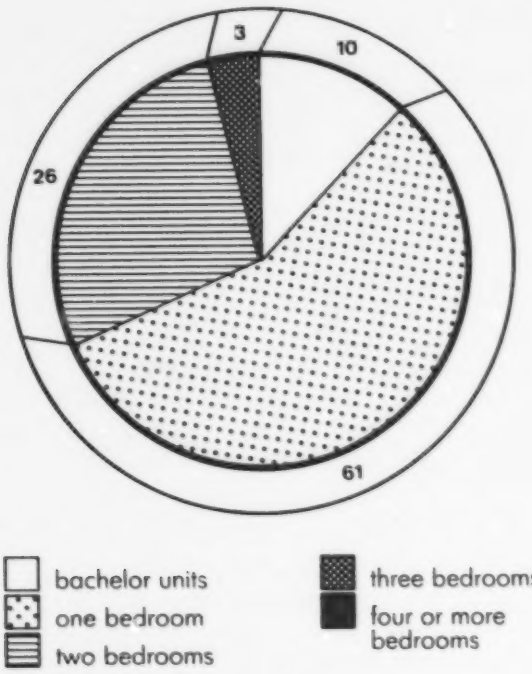
part 7: walk-up apartment dwelling units rental

7.4 older neighbourhoods

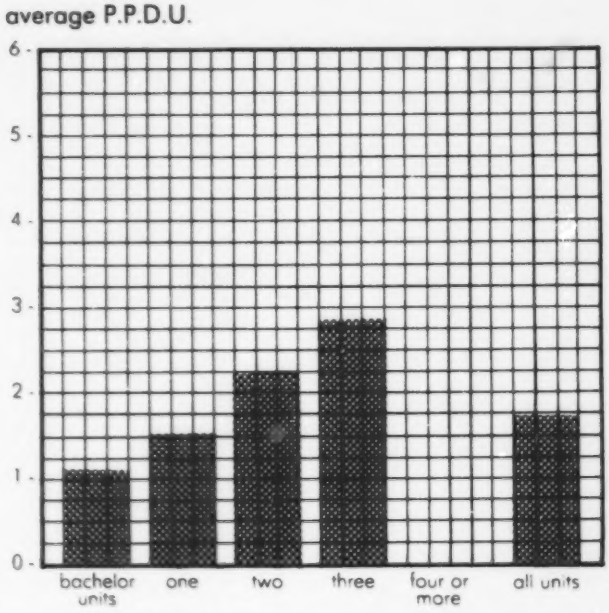
Land Use District
RA7

Average Persons Per Dwelling Unit
1.71 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	1.13	1.53	2.25	2.85	-	1.71
Standard error	±0.03	±0.02	±0.04	±0.12	-	±0.02
Number of cases	247	1430	599	65	0	2341
Percentage of cases	10	61	26	3	0	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 7: walk-up apartment dwelling units rental

7.5 city centre

RA7 & DC3

Large sections of Edmonton's City Centre (Oliver, Downtown and Garneau) have experienced substantial redevelopment of areas of low density housing. Redevelopment has taken the form of commercial development and a variety of forms of residential development. A large proportion of the city's stock of rental walk-up apartments has been developed in these areas. High and medium density development has been encouraged by proximity to commercial areas, a network transportation system and the presence of major institutions and places of employment.

At the effective date of the data used in this report, most of the City Centre fell under a DC3 - Temporary Holding District designation. The Downtown, Oliver and Garneau Plans were in various stages of approval. Consequently, areas currently districted RA7 were then in the Temporary Holding District. During analysis of data, a sample of 559 dwellings under the RA7 District were identified and analyzed separately. The results were so nearly identical to those computed for DC3 areas that the sub-samples were recombined and are considered representative of RA7 rental walk-up apartments in the City Centre.

The average size of households occupying City Centre rental walk-up apartments is 1.45 PPDU. With a sample size of 4,669 dwellings, the sample average is, at a 95% level of confidence, within +0.02 PPDU of the true average of the sub-population. The average household size is not significantly different from that reported for rental high rise apartments in the City Centre. The average household size is significantly and substantially different from that computed for rental apartment accommodation in all areas outside of the City Centre. Part of this difference is due to a characteristic "City Centre" mix of units by number of bedrooms. The remainder is due to real differences in utilization of accommodation capacity in rental apartments in the City Centre and in the remainder of the city.

Bachelor units (11%) and one bedroom units (66%), constitute 77% of rental walk-up apartments in the City Centre. 21% are two bedroom units and 2% are three bedroom units. The mix of units is unquestionably suited to the one or two person household market. This results in the low average household size reported for this category.

Within number of bedrooms categories, the PPDU figures for one and two bedroom units are notably lower than corresponding figures for rental apartments in other areas of the city. They are, for statistical purposes, the same as those computed for rental high rise apartments in the City Centre. Bachelor units, with their low 1.09 PPDU, play an important part in the overall stock of dwellings. Three bedroom dwellings with 2.67 PPDU, but representing only 2% of units, are of minor importance. The ratio of people to bedrooms is 1.09 for bachelor units, and 1.31, 0.97 and 0.89 for one, two and three bedroom units.

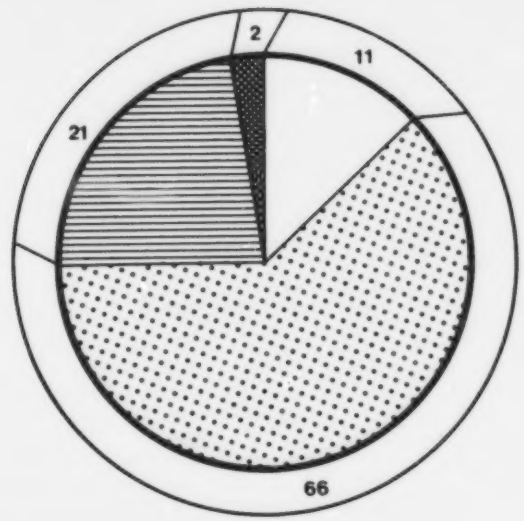
part 7: walk-up apartment dwelling units rental

7.5 city centre

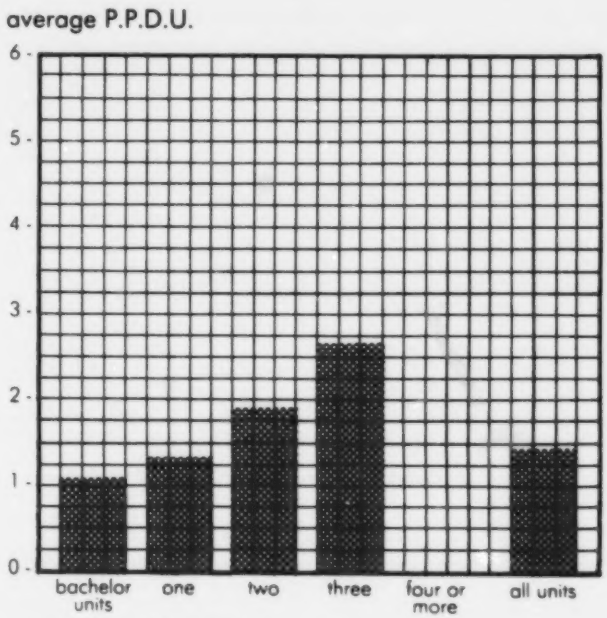
Land Use District
RA7 & DC3

Average Persons Per Dwelling Unit
1.45 ± 0.01▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	1.09	1.31	1.93	2.67	-	1.45
Standard error	±0.01	±0.01	±0.03	±0.09	-	±0.01
Number of cases	489	3082	989	109	0	4669
Percentage of cases	11	66	21	2	0	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

7.6 area structure plan areas

RA7

More than 80% of the city's stock of condominium walk-up apartments is located in ASP Areas, primarily in RA7 Land Use Districts. Over 80% of condominium walk-up apartments are occupied by households which rent from condominium unit owners. With a maximum permitted dwellings per hectare density of 125 units, condominium walk-up apartments have a maximum height of four storeys. Actual structures may have two-four storeys.

The average size of households occupying RA7 condominium walk-up apartments in ASP Areas is 1.82 PPDU. With a sample size of 955 dwellings, the sample average is, at a 95% level of confidence, within ±0.04 PPDU of the true average of the sub-population. The average household size is marginally, but significantly, smaller than the average reported for RA7 rental walk-up apartments in the same areas. The difference is due both to a difference in number of bedroom mix combined with a difference in levels of utilization of accommodation capacity.

The feature that sets the mix of RA7 walk-up condominium apartments apart from rental units in ASP Areas is the presence, in the condominium mix, of bachelor (i.e. studio) units. Although these units represent only 6% of condominium units in the sample, they are not present in the sample of rental units. Approximately 55% of dwellings have two bedrooms while three bedroom units constitute an additional 5% of the stock of RA7 condominium walk-ups. 34% of units have one bedroom. Overall, the mix of dwelling units is suited to a range of one and two person households and small families.

Within number of bedrooms categories, the level of utilization is somewhat below that found in comparable rental accommodation in ASP Areas of accommodation capacity of two and three bedroom units (2.07 and 2.62 PPDU respectively). However, it is similar for one bedroom units (1.44 PPDU). Average household size for bachelor units, 1.08 PPDU, is comparable to that for bachelor units throughout the city. The ratio of persons per bedroom is 1.08 for bachelor units and 1.44, 1.04 and 0.87 for one, two and three bedroom units.

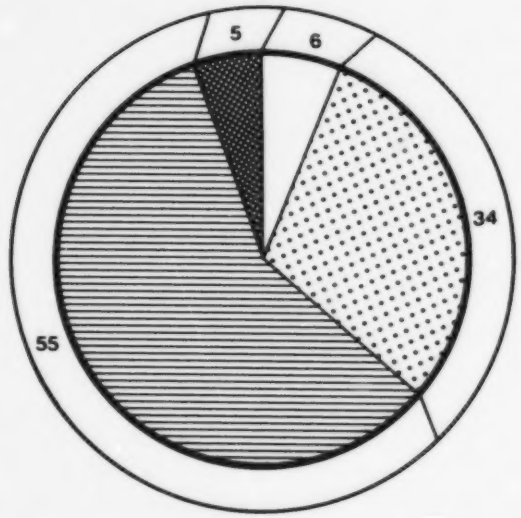
part 7: walk-up apartment dwelling units condominium

7.6 area structure plan areas

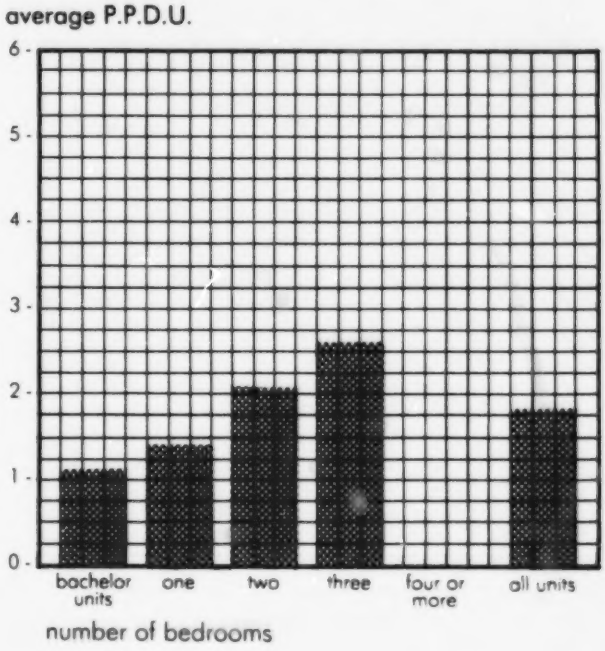
Land Use District
RA7

Average Persons Per Dwelling Unit
1.82 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	**1.08**	**1.44**	**2.07**	**2.62**	-	**1.82**
Standard error	±0.03	±0.03	±0.03	±0.15	-	±0.02
Number of cases	61	323	524	47	0	955
Percentage of cases	6	34	55	5	0	100

✱ *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

7.7 mature suburban areas

RA8

The sample used in this study identified only a few examples of Mature Suburban Area condominium walk-up apartments in RA7 Land Use Districts. Statistics for these cases are not reported. A sample of 343 condominium walk-up apartment units were located in RA8 - Medium Rise Apartment Districts in Mature Suburban Areas. In RA8 Districts, condominium walk-up structures may be developed to a maximum dwelling unit density of 225 dwellings per hectare. Floor area bonuses are granted if family-oriented housing is provided on the lower floors of the structure. Development of this type is usually located adjacent commercial areas or near transportation arteries.

The average size of households occupying RA8 condominium walk-up apartment units in Mature Suburban Areas is 2.00 PPDU. With a sample size of 343 dwellings, the sample average is, at 95% level of confidence, within ±0.05 PPDU of the true average of the sub-population. The average household size is somewhat higher than that reported for RA7 condominium walk-ups in ASP Areas. This difference is due primarily to the number of bedrooms mix for the two samples.

Two bedroom units are the most common reported for RA8 condominium walk-ups in Mature Suburban Areas. They represent 44% of the total number of units. The percentage of three bedroom units, suitable for small family and group type households, is 22%. This figure is higher than that reported for RA7, ASP Area condominiums and is the key factor in the differences found in average household size. Bachelor units, suited to one person households, make up 5% of the sample. One bedroom units constitute 29% of dwelling units in the RA8 condominium walk-up apartment category in Mature Suburban Areas. The abundance of two and three bedroom dwellings, in comparison with other categories of walk-up apartments, suggests some affect attributable to policies which are intended to encourage family-oriented dwellings in RA8 Land Use Districts.

Within number of bedrooms categories, the level of use of accommodation capacity, indicated by the number of persons per bedroom, is generally lower than that reported for rental walk-up apartment dwellings. In comparison with condominium walk-up apartments in other areas, those in RA8 Districts in Mature Suburban Areas have a low level of use of bachelor and one bedroom units (1.00 and 1.22 PPDU respectively) and a high level of utilization (2.12 and 3.00 PPDU) of two and three bedroom dwellings. The ratio of people to bedrooms is rather consistent at 1.00 for bachelor units, 1.22, 1.06 and 1.00 for one two and three bedroom units.

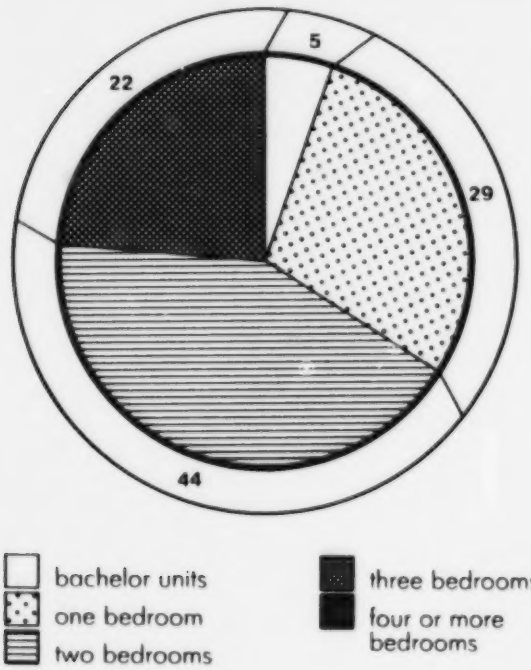
part 7: walk-up apartment dwelling units condominium

7.7 mature suburban areas

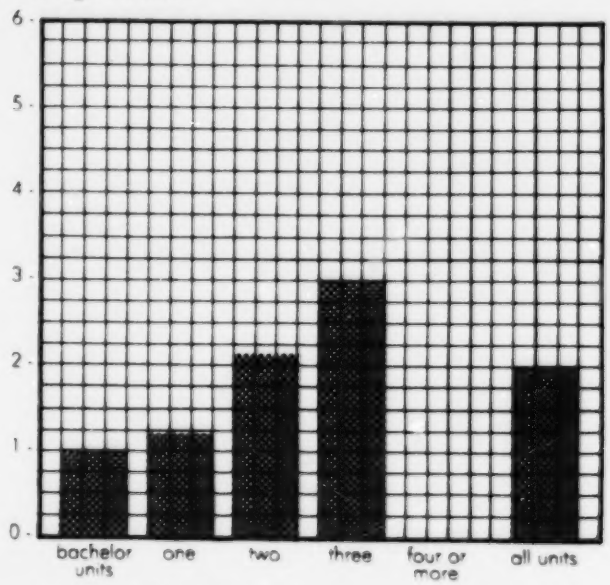
Land Use District
RA8

Average Persons Per Dwelling Unit
2.00 ± 0.05▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	**1.00**	**1.22**	**2.12**	**3.00**	-	**2.00**
Standard error	±0.01	±0.05	±0.06	±0.11	-	±0.05
Number of cases	16	101	152	74	0	343
Percentage of cases	5	29	44	22	0	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

7.8 city centre

RA8, RA9 & DC3

The sample used in this study identified only a few examples of City Centre condominium walk-up apartments in RA7 Land Use Districts. Statistics on these cases are not reported. However, a sample of 359 dwellings in RA8, RA9 and DC3 Districts were identified. As most of the City Centre was within the DC3 -Temporary Holding District at the effective date of the data, at least a portion of the sample reported is currently within an RA7 Land Use District. As a result of the range of variations in regulations permitted under RA7, RA8 and RA9 Districts the sample could have a variety of building structure characteristics. However, since the structures are classified as walk-ups, the maximum height would be four storeys in any Land Use District.

The average size of households occupying condominium walk-up apartments in the City Centre is 1.49 PPDU. With a sample size of 359 dwellings, the sample average is, at a 95% level of confidence, within ±0.06 PPDU of the true average of the sub-population. The difference between average household size in rental and condominium walk-up apartment dwellings in the City Centre is not statistically significant; nor is there a significant difference in average household size between City Centre condominium and rental walk-up apartments when figures are compared within number of bedrooms categories. Differences in the mix of units by number of bedrooms are not sufficient to overcome the overall similarities in utilization of accommodation capacity between rental and condominium dwellings. This is not surprising in view of the fact that the majority of condominium dwellings, over 80% for walk-up and 50% for high rise condominium dwellings, are occupied by households which rent from a condominium owner.

The majority, 57%, of dwellings in City Centre condominium walk-up apartments are one bedroom units. An additional 8% of dwellings are bachelor units bringing the total proportion of units suitable for one or perhaps two person households to 65%. Two bedroom units constitute 32% and three bedroom units comprise 3% of the sample.

Generally, the number of bedrooms mix for City Centre condominium walk-up apartment dwellings is more similar to that found in City Centre rental structures, both walk-up and high rise, than to that reported for other forms of condominium accommodation. Specifically, there is a concentration of bachelor and one bedroom units.

Within number of bedrooms categories, average household sizes for condominium walk-ups are similar to those reported for rental walk-ups in the City Centre. In both cases, the level of utilization of accommodation capacity, measured in persons per bedroom, is low for two and three bedroom units. At 1.80 PPDU and 2.60 PPDU respectively, the ratio of people to bedrooms is 0.90 and 0.87 for two and three bedroom dwellings. At 1.07 PPDU, bachelor units are used almost totally by one person households. Also, in one bedroom dwellings, the majority of households consist of a single person. This results in an average household size of 1.32 PPDU for one bedroom units.

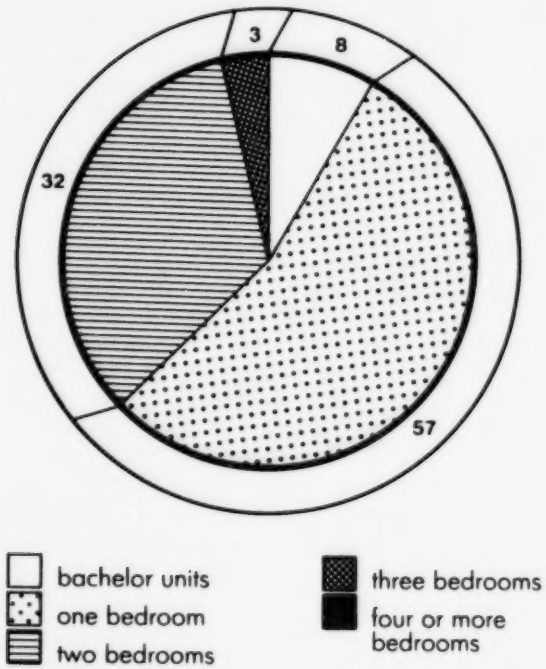
part 7: walk-up apartment dwelling units condominium

7.8 city centre

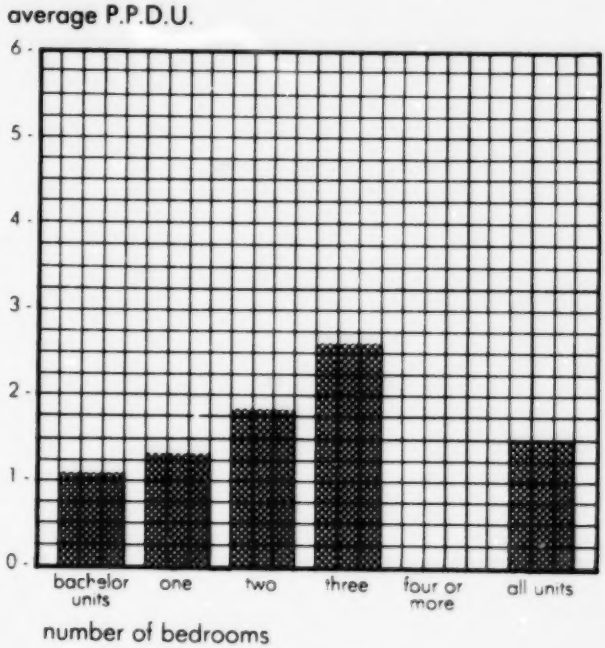
Land Use District
RA8, RA9 & DC3

Average Persons Per Dwelling Unit
1.49 ± 0.03▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	**1.07**	**1.32**	**1.80**	**2.60**	-	**1.49**
Standard error	±0.05	±0.04	±0.07	±0.34	-	±0.03
Number of cases	30	206	113	10	0	359
Percentage of cases	8	57	32	3	0	100

* *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

part 7: walk-up apartment dwelling units

7.9 household type profiles

7.9.1 walk-up apartments - rental

In all areas of Edmonton, rental walk-up apartment dwellings accommodate primarily single adults and pairs of adults without children. These two types of households represent 69% of households in ASP Areas, 72% in Mature Suburban Areas, 84% in Older Neighbourhoods and 93% in the City Centre. Thus, while one or two adult households are in the majority in rental walk-up apartment dwellings in all parts of Edmonton, the concentration is much higher in City Centre and Older Neighbourhoods than in Mature Suburban Areas and ASP Areas.

In ASP Areas, the two adult household is more common than the one adult household (42% two adults, 27% one adult). This relationship changes in a regular way through Mature Suburban Areas and Older Neighbourhoods until, in the City Centre there are 63% one adult and 30% two adult households. The overall pattern of concentration of smaller households in more central areas is consistent with the change in the reported mix of dwellings by number of bedrooms, and with average household sizes computed for each area.

While the household profile of rental walk-up apartments in ASP Areas is dominated by one (27%) and two (42%) adult households, 27% of households include children. A third of these, 9% of total households, include single adults with one or more children 17 years of age or under. In itself this percentage is not large, however, as the household type represented is single parent families, ASP rental walk-ups must be considered a major source of accommodation for this type of household. Adult pairs with children, a configuration indicative of a nuclear family, constitute 15% of households in rental walk-ups in ASP Areas. This figure is high compared to figures for City Centre walk-up apartments but is much lower than figures reported for single, semi-detached and row housing dwellings in ASP Areas.

In Mature Suburban Areas, one adult households (38%) supersede two adult households (34%) as the most common household type in rental walk-up apartments. Households without children, including three or more adult households (5%), constitute 77% of all households. 23% of households have children 17 years of age or under. At 15%, the percentage of households with two adults plus one or more children is the same as in ASP area rental walk-up apartments and much below figures reported for lower density forms of housing in Mature Suburban Areas. There is a considerable proportion of single parent families (6%) relative to more central locations.

In Older Neighbourhoods, one adult (47%) and two adult households (37%) comprise 84% of the households in rental walk-up apartments. Group households, with and without children, comprise only 3% and 1% of households respectively as the proportion of dwellings capable of housing households of this size is limited. Altogether, only 13% of households include children with 4% being single parent families, 8% two adults with children and 1% three or more adults with children.

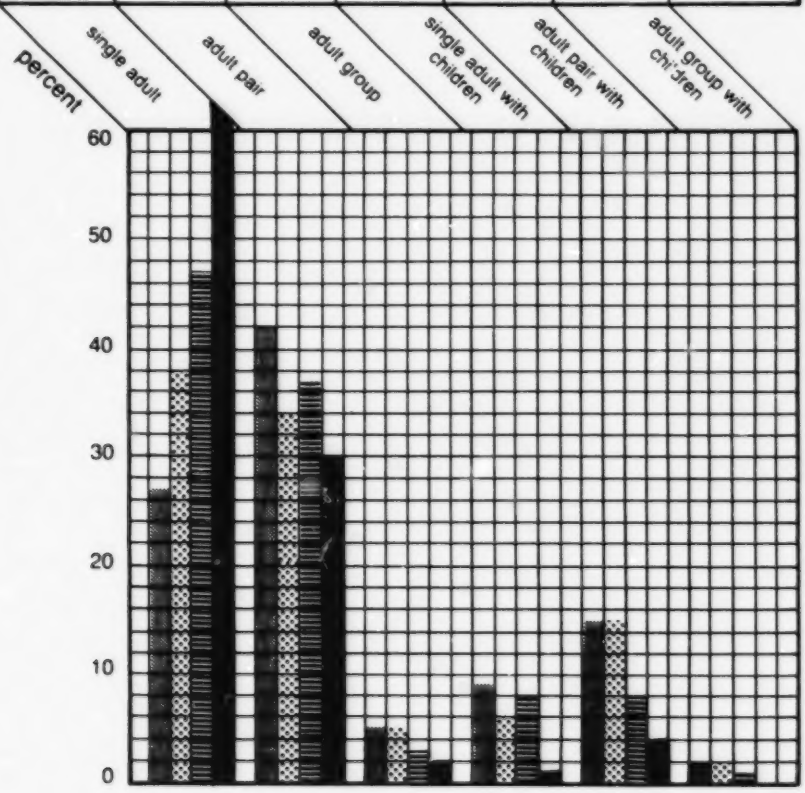
The majority, 63%, of households in rental walk-up apartments in the City Centre are single person households. An additional 30% are two adult households. Only 5% of households include children with 4% including two adults plus children. Households with three or more adults are, at 2% of the total, relatively insignificant. The household profile for City Centre walk-up units is reflected in the predominance of small, one and two person households indicated by average household size figures. These are, in turn, related to the accommodation capacity of walk-up apartment dwellings in the City Centre where a substantial majority of dwellings are suited to small one and two person households.

part 7: walk-up apartment dwelling units

7.9 household type profiles

7.9.1 walk-up apartments - rental

area legend	household types						N = Sample Size
Area Structure Plan Areas	27%	42%	5%	9%	15%	2%	N = 682
Mature Suburban Areas	38%	34%	5%	6%	15%	2%	N = 1036
Older Neighbourhoods	47%	37%	3%	4%	8%	1%	N = 2341
City Centre	63%	30%	2%	1%	4%	0%	N = 4669



part 7: walk-up apartment dwelling units

7.9 household type profiles

7.9.2 walk-up apartments - condominium

In all areas of Edmonton, condominium walk-up apartment dwellings accommodate primarily single adult and adult pair households. This situation parallels the dominance of one and two adult households resident in rental walk-up apartment units. In ASP Areas and Mature Suburban Areas, one and two adult households constitute between 71% and 76% of all households. However, in the City Centre, 93% of households consist of one or two adults without children. Furthermore, the proportion of single adult households increases from 30% in ASP Areas to 59% in the City Centre.

The concentration of small one and two person households is consistent with the high proportion of bachelor, one and two bedroom units in the overall number of bedrooms mix in condominium walk-ups.

In ASP Areas, 30% of households in condominium walk-up dwellings consist of one adult, 46% consist of two adults and only 3% consist of three or more adults. Altogether, 79% of households do not include children. 15% of households consist of two adults with children 17 years of age or less. Single parent families comprise 4% of households. The percentage of adult groups with children is, at 2%, rather small.

The proportion of one adult (37%) plus two adult (34%) households in Mature Suburban Areas is 71%. With an additional 8% of households including three or more adults, adult households without children comprise 79% of households in condominium walk-up apartments in Mature Suburban Areas. Households with children constitute 21% of all households. 8% of households are single parent households, 11% consist of two adults with children and 2% consist of three or more adults plus children.

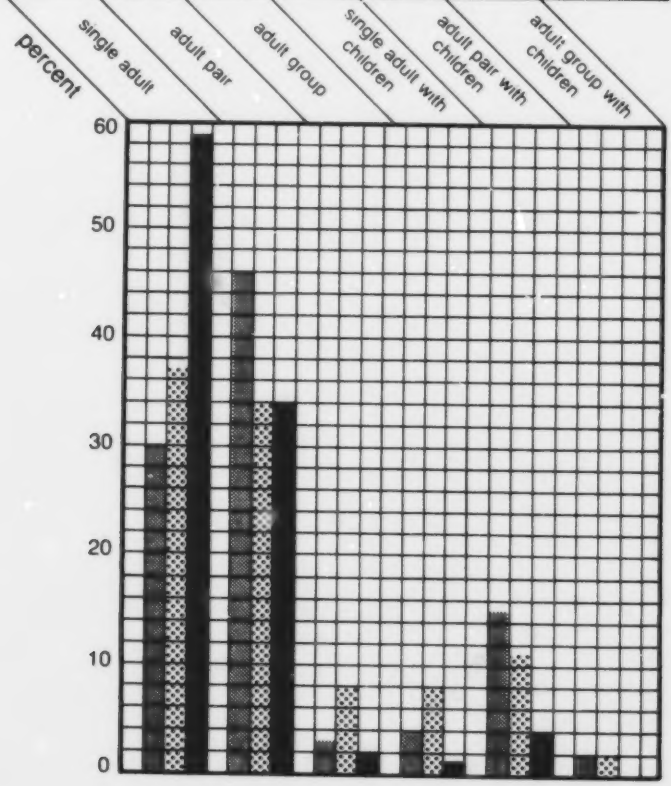
In the City Centre, the majority, 59%, of condominium walk-up apartment dwellings accommodate single person households. An additional 34% accommodate two adult households while 2% are used by three or more adults without children. In total, only 5% of households in condominium walk-up apartments in the City Centre include children: 4% are households with two adults plus children and a low 1% are single parent households. Generally, the household profile of condominium walk-up apartment dwellings is consistent with the concentration of bachelor, one bedroom and two bedroom dwellings in the City Centre.

part 7: walk-up apartment dwelling units

7.9 household type profiles

7.9.2 walk-up apartments - condominium

area legend	household types						N = Sample Size
Area Structure Plan Areas	30%	46%	3%	4%	15%	2%	N = 955
Mature Suburban Areas	37%	34%	8%	8%	11%	2%	N = 343
City Centre	59%	34%	2%	1%	4%	0%	N = 359



part 8: high rise apartment dwelling units

part 8: high rise apartment dwelling units rental

8.1 city centre

RA8, RA9 & DC3

Over 80% of rental high rise apartment structures in Edmonton are clustered in the City Centre. This area consists of sections of the city within the Oliver, Downtown and Garneau ARP Areas. At the effective date of the data used in this study, most of the land within these areas was within the DC3 Temporary Holding District pending approval of the respective ARPs. Subsequent to approval of the plans, land with high rise apartment structures (i.e. five or more storeys) was redistricted to RA8 -Medium Rise Apartment and RA9 - High Rise Apartment Land Use Districts. The essential difference between these two districts is in the permitted dwelling unit per hectare densities. The RA8 designation permits 225 dwellings per hectare. Floor area bonuses are granted if family-oriented housing is provided on the lower floors. The RA9 designation permits a dwelling unit density of 325 dwellings per hectare.

Rental high rise apartment structures are clustered in the City Centre in proximity to concentrations of commercial and retail services, major institutions and sources of employment. These are linked by a developed transportation network. Examples of rental high rise structures outside the City Centre are either similar to those in the City Centre (i.e. those in Scona and Scona East) or scattered.

The average size of households occupying rental high rise apartment dwelling units in the City Centre is 1.43 PPDU. With a sample size of 6,097, the sample average is, at a 95% level of confidence, within $\pm$0.02 of the true average for the sub-population. This average household size is the smallest reported for any type of structure in any area of the city. However, when standard error figures are considered, and indeed for most practical purposes, the average household size for rental high rise structures, is the same as that for rental walk-up apartments (1.45 $\pm$0.02) and condominium walk-up apartments (1.49 $\pm$0.03) in the City Centre.

About 59% of rental high rise dwelling units have one bedroom. An additional 12% are bachelor units bringing the total proportion of units suitable to one person or two person households to 73%. Two bedroom units constitute 28% of dwelling units and only 1% are three bedroom units. Overall, the number of bedrooms mix is dominated by units suited to small households.

Within number of bedrooms categories the average household size is similar to that reported for rental walk-ups in the City Centre for bachelor units (1.07 PPDU), one bedrooms units (1.28 PPDU) and two bedroom units (1.91 PPDU). Three bedroom units have a comparatively low average household size of 2.25 PPDU. The ratio of persons to bedrooms is 1.07 for bachelor units and 1.28, 0.96 and 0.75 for one, two and three bedroom units.

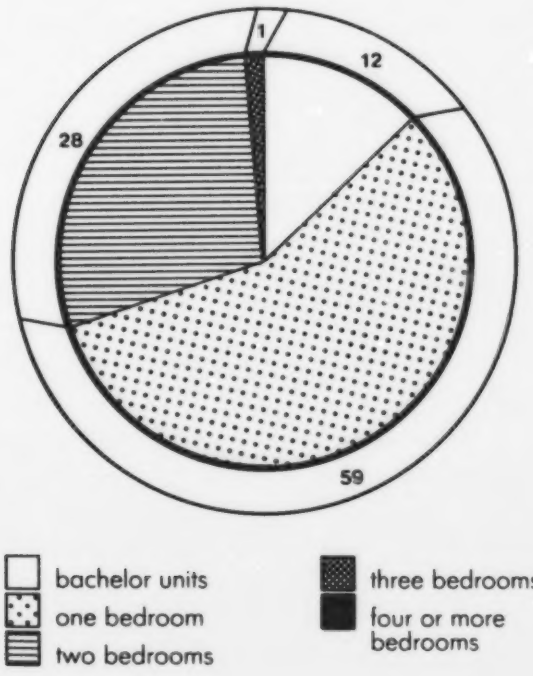
part 8: high rise apartment dwelling units rental

8.1 city centre

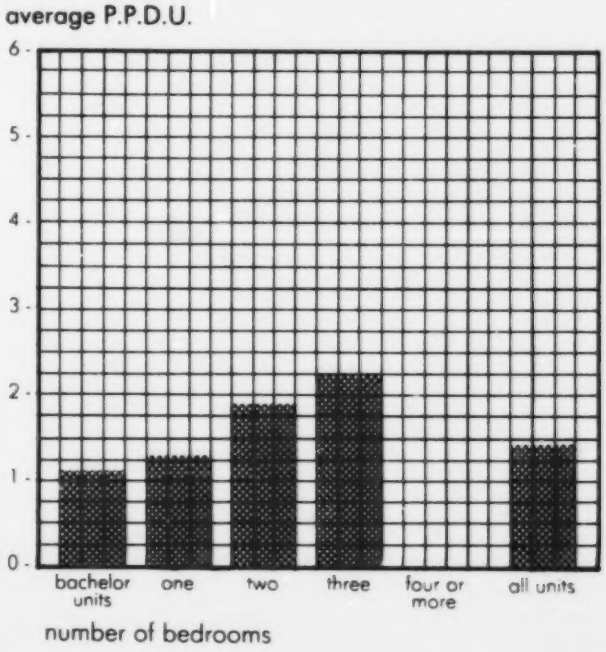
Land Use District
RA8, RA9 & DC3

Average Persons Per Dwelling Unit
1.43 ± 0.01▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	**1.07**	**1.28**	**1.91**	**2.25**	-	**1.43**
Standard error	±0.01	±0.01	±0.02	±0.14	-	±0.01
Number of cases	753	3621	1687	36	0	6097
Percentage of cases	12	59	28	1	0	100

✱ *insufficient cases for calculation of reliable average P.P.D.U.*

▲ *two standard errors provides 95% confidence level.*

8.2 city centre

RA8, RA9 & DC3

Approximately 80% of condominium high rise apartment structures in Edmonton are located in the City Centre or are in close proximity to it. This area consists of sections of the city within the Oliver, Downtown and Garneau ARP areas. At the effective date of the data used in this study, most of the land within these areas was within the DC3 -Temporary Holding District pending approval of the respective ARPs. Subsequent to approval of the plans, land with high rise apartment structures (i.e. five or more storeys) was redistricted to RA8 - Medium Rise Apartment and RA9 - High Rise Apartment Land Use Districts. The essential difference between these two districts is in the permitted dwelling unit densities per hectare. The RA8 designation permits 225 dwellings per hectare. Floor area bonuses are granted if family-oriented housing is provided on the lower floors. The RA9 designation permits a dwelling unit density of 325 dwellings per hectare. About 50% of condominium high rise apartment dwelling units are occupied by households which rent from condominium unit owners.

Condominium high rise apartment structures are clustered in or near the City Centre in proximity to concentrations of commercial and retail services, major institutions and sources of employment. These are linked by a developed transportation network. Examples of condominium high rise structure outside the City Centre are either very similar to those in the City Centre (i.e. those in Scona and Scona East) or scattered.

The average size of households occupying computed for condominium high rise apartment dwelling units in the City Centre is 1.71 PPDU. With a sample size of 949 dwellings, the sample average is, at a 95% confidence level, within $\pm$0.04 of the true average of the sub-population. This average household size is significantly different from the figure reported for rental high rise apartments dwellings. The difference is due to an underlying difference in the number of bedrooms mix for these types of accommodation.

Approximately 71%, of condominium high rise apartment dwellings in the City Centre are two bedroom units. 22% have one bedroom and 6% have three bedrooms. Bachelor units and four bedroom units are rare, comprising only 1% of dwellings between them. The importance of two bedroom units to the mix of condominium high rise apartments represents a marked difference between the stock of rental and condominium dwellings. This difference is reflected in a higher average household size in condominium high rise dwellings.

Within number of bedrooms categories, the average household size for one and two bedroom units is, at 1.38 PPDU and 1.76 PPDU, quite similar to the average household size reported for condominium walk-up apartments in the City Centre. However, the difference in the mix of dwellings by number of bedroom in these two types of structures results in a higher overall average household size in high rise dwellings.

The ratio of people to bedrooms in the City Centre sample of condominium high rise buildings is 1.00 for bachelor units, and 1.38, 0.88, 0.78 and 0.58 persons per bedroom for one, two, three and four bedroom dwellings.

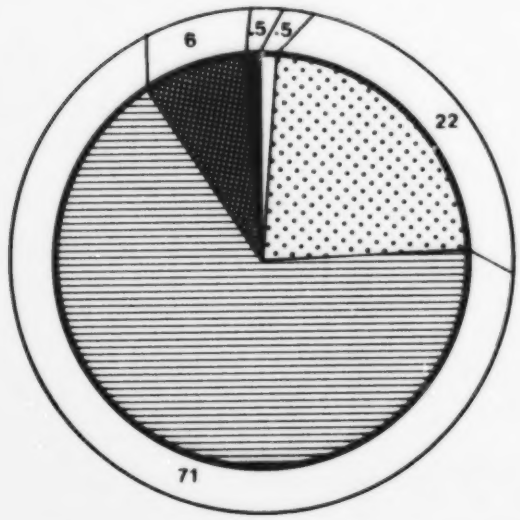
part 8: high rise apartment dwelling units condominium

8.2 city centre

Land Use District
RA8, RA9 & DC3

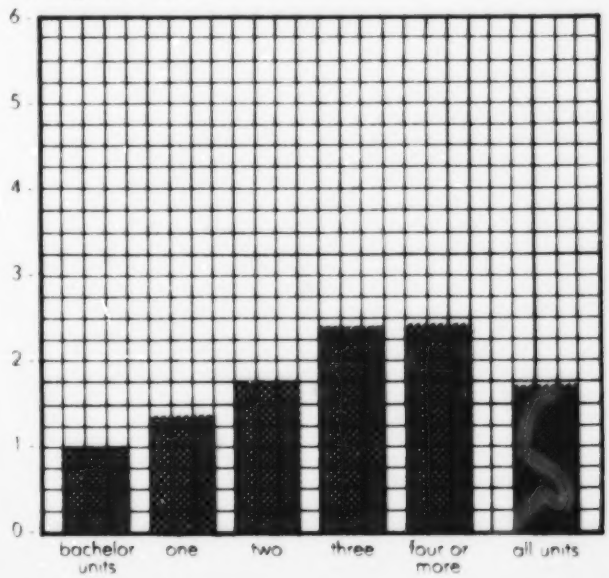
Average Persons Per Dwelling Unit
1.71 ± 0.02▲

Mix of Dwelling Units by Number of Bedrooms (in percent)



bachelor units
one bedroom
two bedrooms
three bedrooms
four or more bedrooms

Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units



Average Persons Per Dwelling Unit by Number of Bedrooms and for All Units

number of bedrooms	bachelor units	one	two	three	four or more	all units
Average P.P.D.U.	1.00*	1.38	1.76	2.34	2.33*	1.71
Standard error	-	±0.02	±0.03	±0.12	-	±0.02
Number of cases	3	206	678	59	3	949
Percentage of cases	0.5	22	71	6	0.5	100

** insufficient cases for calculation of reliable average P.P.D.U.*

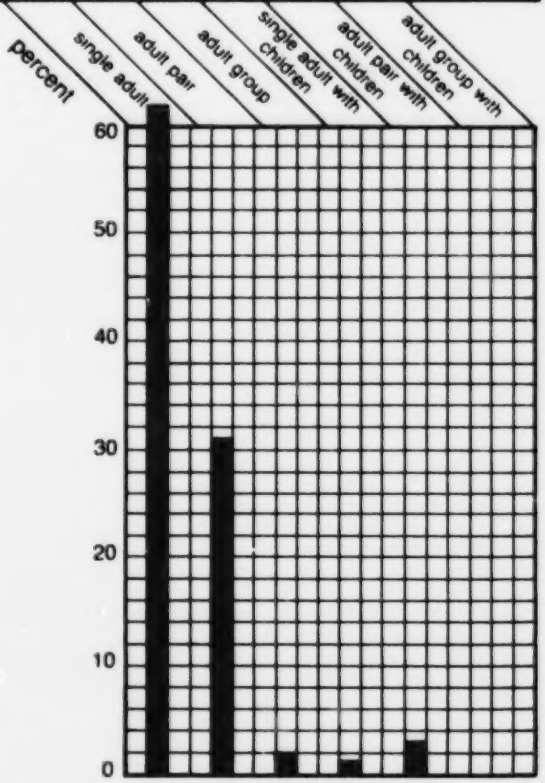
▲ two standard errors provides 95% confidence level.

part 8: high rise apartment dwelling units

8.3 household type profiles

8.3.1 high rise apartments - rental

area legend	household types						N = Sample Size
City Centre	63%	31%	2%	1%	3%	0%	N = 6097



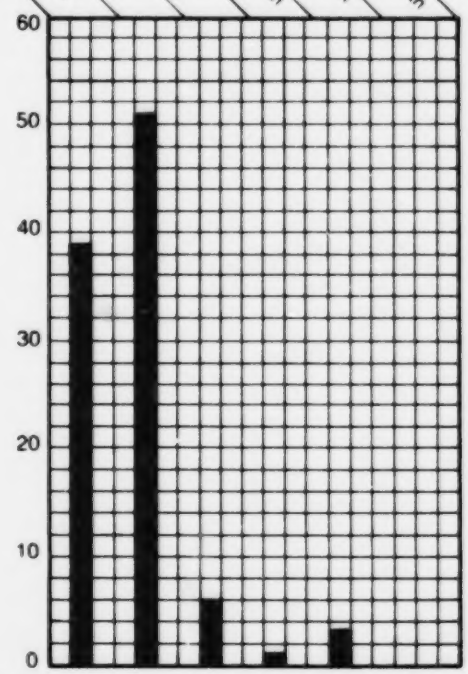
The majority, 63%, of households occupying rental high rise apartment dwellings in the City Centre are one adult households. An additional 31% of households consist of two adults. 2% of households involve three or more adults and no children. Thus, the total population of households with one, two or three adults and no children is an overwhelming 96%. Only 4% of all households include children with 1% being single parent households and 3% being adult pairs with children. The household profile for rental high rise apartments in the City Centre is nearly identical to the profile for rental walk-ups in the same area. The similarity is related to both the mix of dwellings, by number of bedrooms, and the actual level of utilization of accommodation capacity on a persons per bedroom basis.

part 8: high rise apartment dwelling units

8.3 household type profiles

8.3.2 high rise apartments - condominium

area legend	household types						N = Sample Size
	Percent	single adult	adult pair	adult group	single adult with children	adult pair with children	adult group with children
City Centre	39%	51%	6%	1%	3%	0%	N = 949



A slight majority, 51%, of households resident in condominium high rise apartment dwellings in the City Centre consist of two adults. 39% of households consist of a single adult and 6% consist of three or more adults. Therefore, 96% of households do not include children. This profile differs markedly from that of rental high rise apartments in the importance of two adult households. Condominium units accommodate mostly adult pairs. Households occupying rental high rise dwellings are most often single person households. This difference is related to an underlying difference in the number of bedrooms mix of dwelling units. Two and three bedroom units represent a high proportion of the stock of condominium units and a lower proportion of rental units. Smaller bachelor and one bedroom units are predominant in rental high rise structures.

The key similarity between rental and condominium high rise apartments in the City Centre is the small role these types of dwellings play in accommodating households with children. Only 3% of households consist of an adult pair with children while 1% are single parent households.

part 9: synopsis of results

part 9: synopsis of results

9.1 single detached dwelling units

The following synopsis of findings of the Population Density Study highlights some relationships between types and locations of dwelling units and size and types of households occupying the dwellings. Average household size, both for a category of dwellings and for sub-categories defined by number of bedrooms, is related to the type of dwelling with variations related to location within the city and to Land Use Districts. Additional relationships exist between the mix of units by number of bedrooms, and between household profiles and the type, area of location and Land Use District of a dwelling unit.

9.1 SINGLE DETACHED DWELLING UNITS

1. The average size of households occupying single detached dwellings decreases from ASP Areas, through Mature Suburban Areas to Older Neighbourhoods and the City Centre. Coupled with this change is a parallel change in the number of bedrooms mix of single detached dwellings. Dwellings in ASP Areas are reported to have, on average, more bedrooms than do dwellings in mature and older areas. Also, the utilization of accommodation capacity, measured by persons per bedroom, drops between ASP Areas and the mature and older areas.

2. As the average household size and number of bedrooms mix varies so do the types of households in various areas of the city. The pattern of variation in household profiles is suggestive of a household aging process which begins with young families establishing residence and rearing a family. As the children grow-up and leave their parents' homes, household sizes decrease. These and other changes are related to the age of neighbourhoods. The changes occurring currently in neighbourhoods of various ages in the city may simulate a temporal change in a single area.

3. The highest average household size in Edmonton, 3.46 PPDU, was computed for households in single detached dwellings in ASP Areas. 94% of these units are reported to have three or more bedrooms indicating a general suitability to family and group type households.

4. The average size of households occupying single detached dwellings in Mature Suburban Areas is, at 3.21 PPDU, somewhat below that reported in ASP Areas. The difference is related to two factors. The proportion of three or more bedroom units drops to 87% in the Mature Suburban Areas, but more importantly the level of utilization of accommodation capacity, measured by a ratio of persons per bedroom, is lower than in newer areas. This change most likely reflects household aging.

5. In Older Neighbourhoods and the City Centre, average size of households occupying single detached dwellings is, in RF1 Land Use Districts, 2.61 PPDU and, in infill and redevelopment districts, 2.52 PPDU. This average household size is very low compared to that found in single detached dwellings in mature or new suburban areas. This is related to both a mix of dwellings that contains more of the smaller one and two bedroom units than are found in newer areas and a level of utilization of accommodation capacity below that reported in newer areas. These factors reflect differences in the housing stock as well as the processing of household aging.

6. In ASP Areas, households with two adults plus one or more children 17 years of age or under represent 55% of all households living in single detached dwellings in ASP Areas. Altogether, 66% of households occupying single detached dwelling units in ASP Areas include children 17 years of age or younger living with one, two or three or more adults.

9.2 semi-detached dwelling units
9.3 duplex, triplex and fourplex dwelling units

7. Of the households occupying single detached dwelling units in Mature Suburban Areas, 44% include children 17 years of age or younger. Of the households without children, 30% include adult pairs and 18% include three or more adults. Some portion of the adult group households involve parents plus adult "children" who have not yet left the family home.

8. In single detached dwellings in Older Neighbourhoods and the City Centre, only 27% of households include children 17 years of age or under. A much larger proportion, 58%, are one or two adult households. This is generally a reflection of household aging but may also indicate occupation of this type of housing by young adult singles and couples interested in convenient access to the downtown area.

9.2 SEMI-DETACHED DWELLING UNITS

1. The average size of households occupying semi-detached dwellings in ASP Areas is, at 3.32 PPDU, lower than that for single detached units. The difference is closely related to an underlying difference in the number of bedrooms mix between the two types of dwellings. Semi-detached dwellings are less likely to have four or more bedrooms, and more likely to have two bedrooms than are detached units. Nevertheless, 88% of semi-detached dwellings in ASP Areas are suitable for family or group type households requiring three or more bedrooms.

2. In Mature Suburban Areas, Older Neighbourhoods and the City Centre, the average size of resident households computed for semi-detached dwellings is 3.18 PPDU. This figure is below that calculated for ASP Areas but is very close to the average household size reported for single detached dwellings in Mature Suburban Areas. Of note is that the sample of semi-detached dwellings is drawn primarily from RF4 Districts in Mature Suburban Areas. This suggests an underlying similarity in the characteristics of households in single detached and semi-detached units in this area, a similarity also noted in ASP Areas. 89% of semi-detached dwellings in the mature and older areas of the city are suitable for family or group type households requiring three or more bedrooms.

3. Of the households occupying semi-detached dwellings in ASP Areas, 61% include children 17 years of age or under. 46% of households include two adults plus one or more young children. Of the households without children, the most common is, at 23%, the two adult household.

4. In mature and older areas of the city, 47% of households occupying semi-detached dwellings include children 17 years of age or younger. 20% of households include three or more adults without children but a portion of these include parents with adult "children" living in the family home. Of households without children, pairs of adults tend to be the most common at 27% of the total. Overall, the household profile for this category of dwellings is quite similar to that reported for single detached dwellings in Mature Suburban Areas.

9.3 DUPLEX, TRIPLEX AND FOURPLEX DWELLING UNITS

1. Duplex dwellings are a common form of infill and redevelopment housing throughout the city. The computed average size of households occupying duplex dwellings is 2.81 PPDU. Dwellings suitable for family or group type households requiring three or more bedrooms, represent 67% of all duplex units.

9.4 row housing dwelling units

2. Triplex and fourplex dwellings are, like duplex units, common forms of infill or redevelopment housing throughout the city. The average size of households occupying dwellings of this type is 2.44 PPDU. Triplex and fourplex dwellings are generally smaller than duplex units with only 48% of units having three or more bedrooms.

3. Households including children 17 years of age or less constitute 34% of households occupying duplex dwellings. At 32%, the most common type of household associated with duplex dwellings consists of two adults. Single adult households constitute 16% of all households.

4. The household profile for triplex and fourplex units is similar to that of duplex dwellings except for an even greater emphasis on households with only one (21%) or two adults (38%). Households with children represent only 24% of all households occupying triplex and fourplex dwellings.

9.4 ROW HOUSING DWELLING UNITS

1. As a general rule, with only one exception, the average size of households occupying row housing dwelling units, both rental and condominium, is relatively consistent throughout the city. Average household sizes range from a low of 2.88 PPDU to a high of 3.27 PPDU. Related to this is a rather standardized mix of row housing dwellings with the majority of units having three bedrooms. The exception to the rule is the sample of RA7 Districted row housing identified in ASP Areas. The dwellings in this sample seem to be a cross between row housing and walk-up apartments both in terms of structural characteristics and the size of households (2.48 PPDU) found within them.

2. The average size of resident households computed for ASP Area RF5 rental row housing dwellings is 3.17 PPDU. 85% of these row house dwellings have three or more bedrooms indicating a general suitability to family and group type households. The basic structural design in this category of dwellings is the row or linked structure with all units at ground level.

3. The sample of rental row housing dwelling units found in ASP Area, RA7 Land Use Districts is quite different from other row housing samples. In size and appearance these units are often similar to walk-up apartments. However, with direct access to ground level, they qualify as stacked row housing structures. The average size of households occupying these dwellings is 2.48 PPDU. The majority, 53%, of these units are reported to have two bedrooms, which is a departure from the dominance of three bedroom units in other row housing samples. To some degree, the sample of RA7 row housing in ASP Areas may be representative of forms of row housing that can be expected in RF6 Land Use Districts.

4. In mature and older areas of Edmonton, the average size computed for households occupying RF5 rental row housing dwellings is at 3.09 PPDU, marginally below the figure reported for RF5 units in newer suburbs. At 58%, three bedroom units are most common among RF5 row house dwellings in mature and older neighbourhoods although two bedroom units make up a substantial 33% of dwellings.

5. The average size of households occupying rental row housing in RA7 and RA8 Land Use Districts in Mature Suburban Areas is 3.27 PPDU. The number of bedrooms mix of dwellings in this category (84% of dwellings have

three bedrooms) is closely related to the difference between RA7/RA8 and RF5 row housing in similar areas. The RA7/RA8 dwellings have a comparatively greater proportion of the larger three bedroom units.

6. Over 80% of condominium row housing dwellings in Edmonton are located in ASP Area, RF5 Land Use Districts. The number of bedrooms mix is very standardized with 91% of dwellings reported to have three bedrooms. The average household size computed for dwellings in this category is 2.93 PPDU. This figure is lower than that reported for RF5 rental row housing in other areas of the city.

7. Based on analysis of a small sample of condominium row housing in RA7 and RA8 Land Use Districts in ASP Areas, there is no significant difference in average size of resident households between condominium row housing in RF5 and in RA7 and RA8 Land Use Districts.

8. The average size of households occupying condominium row housing dwellings in Mature Suburban Area, RF5 Land Use Districts is 3.24 PPDU. This figure is high relative to other samples of condominium dwellings. It reflects a real difference between Mature Suburban Areas and ASP Areas in the average household size reported for the very important category of three bedroom units. The respective figures are 3.28 PPDU for Mature Suburban Areas and 2.91 PPDU in ASP Areas. The number of bedrooms mix of dwellings in these two areas is practically identical.

9. The average size of households occupying three bedroom condominium row housing in Mature Suburban Area, RA7 Districts is the same (3.28 PPDU) as that in RF5 Districts. However, due to a larger proportion of two bedroom units in the mix of row housing dwellings in the RA7 Land Use District, the overall average size of households is lower, at 3.02 PPDU, in the RA7 District. The result is a similar level of utilization of accommodation capacity in individual dwellings but a difference in household size related to the number of bedrooms mix of dwellings.

10. Throughout Edmonton, rental row housing dwellings are an important source of accommodation for households with children 17 years of age or less. These households represent 58-65% of households occupying rental row housing. A substantial component of these are single parent households which comprise 16-17% of households occupying rental row housing. To some extent, this is due to public policy in that row housing is the primary type of housing for households with children developed under social housing programs.

11. Condominium row housing is similar to rental row housing in its importance as a source of accommodation for households with children. Between 53% and 56% of households include children. 8-10% of households occupying condominium row housing dwellings are single parent households while 38-40% consist of two adults with children 17 years of age or less.

9.5 WALK-UP APARTMENT DWELLING UNITS

1. For households occupying rental walk-up apartments there is a regular decrease in average size from ASP Areas through Mature Suburban Areas and Older Neighbourhoods to the City Centre. Among ASP Areas, Mature Suburban Areas and Older Neighbourhoods this decline is closely related to an underlying change in the number of bedrooms mix of dwelling units. In other words, the proportion of small bachelor and one

9.5 walk-up apartment dwelling units

bedroom units increases markedly from suburban areas to the City Centre. In the City Centre both the number of bedrooms mix of units and the level of utilization of accommodation capacity, measured by the ratio of persons to bedrooms, results in a comparatively small average household size.

2. For households occupying condominium walk-up apartments, as with households in rental units, variations in average household size are closely related to differences in the number of bedrooms mix of dwellings. In the City Centre the average household size and the number of bedrooms mix for households occupying both rental and condominium units is similar.

3. Walk-up apartments in all areas of the city are occupied primarily by one and two adult households. The proportion of households of this type increases from 69% in ASP Area rental units to 93% in both condominium and rental units in the City Centre. Conversely, the proportion of households with children drops from 26% in ASP Area rental dwellings to 5% in City Centre units.

4. The average size of households occupying rental walk-up apartment dwellings in ASP Area, RA7 Land Use Districts is 2.04 PPDU. This average household size is high when compared with rental walk-up apartments in other areas of the city and it is related to a comparatively high proportion of larger, by rental walk-up apartment standards, two and three bedroom dwellings.

5. Rental walk-up apartments in RA8 Districts in ASP Areas have, at 2.17 PPDU, an average household size larger than that computed for RA7 Districts. Related to this, 63% of dwellings have two bedrooms; 6% have three bedrooms. The high proportion of two and three bedroom dwellings may be the result of Land Use Bylaw policies intended to encourage family-oriented dwellings in RA8 Land Use Districts.

6. In Mature Suburban Areas, 51% of the stock of RA7 rental walk-up dwellings are bachelor or one bedroom units suited to one or two person households. 49% of dwellings have two or three bedrooms. The average household size is 1.91 PPDU, less than in ASP Areas and more than in Older Neighbourhoods and the City Centre.

7. In Older Neighbourhoods, 71% of RA7 rental walk-up dwellings are bachelor or one bedroom units. The proportion of two and three bedroom units is only 29%. The average household size is 1.71 PPDU.

8. In the City Centre, 77% of RA7 and DC3 rental walk-up dwellings are bachelor or one bedroom units suited to one or two person households. The proportion of two and three bedroom units is a very low 23%. The average size of households in City Centre rental walk-ups is 1.45 PPDU. This figure is much lower than corresponding figures for households in walk-up apartments in other areas of the city. However, it is about the same as the average household size reported for both condominium walk-up apartments and rental high rise apartments in the City Centre.

9. Approximately 80% of Edmonton's supply of condominium walk-up apartments are in RA7 Land Use Districts of ASP Areas. The average size of households occupying these dwellings is 1.82 PPDU. The most common size of condominium walk-up apartment dwelling is, at 55% of the total, the two bedroom unit. Only 5% of dwellings have three bedrooms. The remaining dwellings are bachelor units (6%) and one bedroom units (34%).

9.6 high rise apartment dwelling units

10. In this study, the sample of condominium walk-up apartments identified in Mature Suburban Areas was in the RA8 Land Use District. The average size of households occupying these dwellings was 2.00 PPDU. This figure is slightly higher than the average household size reported for ASP Area condominium walk-ups. The difference is related to a different number of bedrooms mix of units. Specifically, 22% of dwellings in the Mature Suburban Area sample have three bedrooms.

11. Condominium walk-up apartment dwellings in the City Centre are similar to rental units in the same area with respect to both average size of households occupying them (1.49 PPDU) and the number of bedrooms mix. 65% of City Centre condominium walk-ups are bachelor or one bedroom units suited primarily to one person households, 35% are larger two or three bedroom units.

9.6 HIGH RISE APARTMENT DWELLING UNITS

1. More than 80% of the city's stock of high rise apartment dwellings are within or in close proximity to the City Centre, an area consisting of the Oliver, Downtown and Garneau ARP areas. The City Centre sample used in this study included more than half of all high rise structures in the city. Based on this sample, there is a clear difference between rental and condominium high rise structures. The majority of rental dwellings are one bedroom units. The majority of condominium dwellings are two bedroom units. The different number of bedroom mix is related to differences in both average household size and household types.

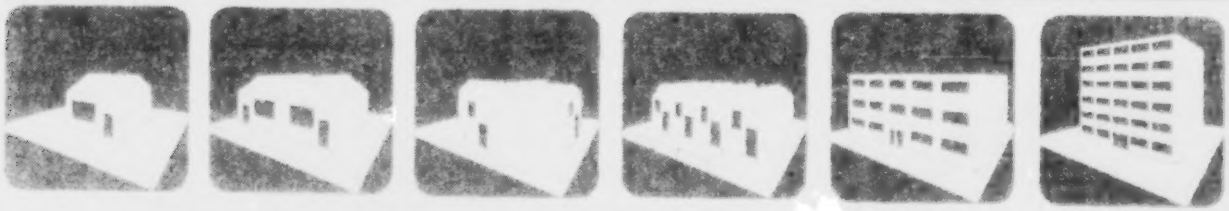
2. The average size computed for households occupying rental high rise structures is, at 1.43 PPDU, the lowest figure reported for any dwelling type. Even so, the average household size is not significantly different from that reported for households in rental and condominium walk-up apartments in the City Centre. The small household size is related primarily to the high proportion of bachelor (12%) and one bedroom (59%) units in the mix of dwellings by number of bedrooms. Only 29% of dwellings of this type have two or three bedrooms.

3. The average household size computed for households occupying condominium high rise apartment dwellings in the City Centre is 1.71 PPDU. This figure is higher than that reported for households in rental high rise dwellings in the same area and relates to a higher proportion of two bedroom (71%) and three bedroom (6%) units in condominium dwellings. This mix masks a relatively low level of utilization of accommodation capacity, measured by the ratio of persons to bedrooms, computed for households in condominium high rise dwellings.

4. One person households comprise 63% of all households occupying rental high rise apartments. Two adult households account for an additional 31%. In total, all households with children amount to only 4% of households.

5. In condominium high rise apartments, two person households constitute 51% of all households. Less common, at 39% of the total, are one adult households. Thus, the relative importance of one and two person households is reversed between rental and condominium high rise apartments. Similar to rental units, however, the proportion of households with children is only 4% in high rise condominium apartments in the City Centre.

appendices



appendix 1 statistical calculations

1. Average Persons Per Dwelling Unit

The Average Persons Per Dwelling Unit statistic was estimated using the following relationship and formula:

$\bar{Y} = \hat{\bar{Y}} = \bar{y}$ = sample mean

Where $\bar{Y}$ is the population mean

$\hat{\bar{Y}}$ is the estimate of the population mean

$\bar{y}$ is the calculated sample mean

and

$$\bar{y} = \sum_{i=1}^{n} \frac{yi}{n}$$

Where $\bar{y}$ is the calculated sample mean

yi is the number of persons in the ith case (dwelling unit)

n is the number of cases (dwelling units) in the sample

2. Standard Error of Estimate

The standard error of estimate is derived from sample size and variance. The use of the stratified random cluster sampling technique, rather than simple random sampling, leads to some limited uncertainty in the result of the standard error calculation. This uncertainty may be translated into a minor underestimate of the standard error. However, the large sampling fractions used in this study counterbalance this possible underestimate and, if incorporated in the calculation of standard error, would always reduce the standard error of estimate. Sampling fractions are not included in the calculation of standard error presented in this report and the resulting overestimate of standard error compensates for a possible underestimate due to the use of stratified random cluster sampling.

The following formula was used for standard error of estimate calculations.

$$s_{\bar{y}} = \frac{s}{\sqrt{n}}$$

Where $s = \sqrt{s^2}$

and $$s^2 = \sum_{i=1}^{n} \frac{(yi-\bar{y})^2}{n-1}$$

Where $s_{\bar{y}}$ = standard error of estimate

s = standard deviation of the sample

n = number of cases

s^2 = variance of the sample

yi = the number of persons in the ith case (dwelling unit)

$\bar{y}$ = the calculated sample mean

3. Percentage Mix of Dwelling Units by Number of Bedrooms

The percentage mix of dwelling units by number of bedrooms is derived from the following formula:

$m_i\%$ =

$$\frac{\text{total dwelling units with i bedrooms} \times 100}{\text{total dwelling units}}$$

Where m_i is the percentage of dwelling units with i bedrooms
and i can take the values (0 (bachelor unit), 1, 2, 3, 4 or more)

corollary

$m_0\% + m_1\% + m_2\% + m_3\% + m_4\% = 100\%$

appendix 1 statistical calculations

4. Percentages of Household Types

The percentage of household types was derived using the following formula:

$h_i\%$ =

$$\frac{\text{total household of type i} \times 100}{\text{total households}}$$

Where $h_i\%$ is the percentage of household type i and

i can take the definitions (single adult, adult pair, three or more adults, single adult with children, adult pair with children, three or more adults with children)

corollary

$$h_1 + h_2 + h_3 + h_4 + h_5 + h_6 = 100\%$$

appendix 2 population projection formulae for small areas based on average persons per dwelling unit

The statistics on average persons per dwelling unit presented in this report may be used to project small area populations based on expected housing types, dwelling unit sizes and Land Use Districts. A variety of formulae can be used depending on the purpose for which the predictions are to be used.

A. Simple Population Projection

1. A simple population projection for one specific structure type in one specific area type with a standard mix by bedroom size and standard average persons per dwelling unit is obtained using the following formula:

$$P = \bar{p} \times d (1 - v)$$

Where

P = total number of people

$\bar{p}$ = average persons per dwelling unit

d = number of dwelling units

v = vacancy rate

Example:

Estimation of the expected population in d = 100 single detached dwelling units in an Area Structure Plan (ASP) Area.

The calculation is based on the following information:

a) The mix of dwelling units by number of bedrooms is the standard mix (i.e. 6% two bedroom, 75% three bedrooms, 19% four or more bedrooms) for single detached dwellings in ASP Areas.

b) The average persons per dwelling unit ($\bar{p}$) is standard (i.e. 3.46) for single detached dwelling units in ASP Areas.

c) All dwelling units are occupied (i.e. vacancy rate = 0).

The calculation is:

$$P = \bar{p} \times d (1 - v)$$
$$= 3.46 \times 100$$
$$= 346$$

If a vacancy rate of 2% is assumed, the calculation becomes:

$$P = 3.46 \times 100 (1 - .02)$$
$$= 3.46 \times 98$$
$$= 339$$

2. Usually, population projections for small areas would involve more than one dwelling unit structure type. For example, proposed development in an ASP Area neighbourhood may include: 400 single detached dwellings in RF1 Land Use Districts, 200 rental row house and 150 condominium row house units in RF5 Land Use Districts, and 100 rental row house and 300 rental walk-up apartment units in RA7 Land Use Districts. The expected population estimate would be derived by summing the projected populations for all sets of dwelling units. The formula is:

$$P = \sum_{i=1}^{m} \bar{p}_i \times d_i (1 - v_i)$$

Where

P = total number of people

$\bar{p}_i$ = average persons per dwelling unit in the type ith dwelling unit type

d_i = number of dwelling units in the ith dwelling unit type

v_i = vacancy rate in the ith dwelling unit type

m = number of types of dwelling units in the area

appendix 2 population projection formulae for small areas based on average persons per dwelling unit

Example:

Estimation of the expected population of a neighbourhood with a housing mix as indicated above in an ASP Area. The calculation is based on the following information.

a) The mix of dwelling units by number of bedrooms is the standard mix for each structure type in the Land Use District indicated for ASP Areas.

b) The average persons per dwelling unit ($\bar{p}_i$) is standard for each structure type in the Land Use District indicated for ASP Areas. The following table of values would apply.

Set No.	Structure Type	Land Use District	Number of Units	Average P.P.D.U.
1	Single Detached Dwelling	RF1	400	3.46
2	Row House (Rental)	RF5	200	3.17
3	Row House (Condominium)	RF5	150	2.93
4	Row House (Rental)	RA7	100	2.48
5	Walk-up Apartments (Rental)	RA7	300	2.04

c) All dwelling units are occupied (i.e. vacancy rate = 0).

The calculation is:

$$P = \sum_{i=1}^{5} (\bar{p}_i \times d_i (1 - v_i))$$

$$P = (3.46 \times 400) + (3.17 \times 200) + (2.93 \times 150) + (2.48 \times 100) (2.04 \times 300)$$

$$= 1384 + 634 + 440 + 248 + 612$$

$$= 3{,}318 \text{ persons}$$

3. Although use of the above average persons per dwelling unit calculations is suitable for most purposes, some users may require that their calculated population estimates include an indication of the level of confidence that is associated with the result. In these cases, standard error can be used to give upper and lower ranges to the estimate. The formulae used are as follows:

$$P_{max} = (\bar{p} + n(s_{\bar{p}})) \times d (1 - v)$$

$$P_{min} = (\bar{p} - n(s_{\bar{p}})) \times d (1 - v)$$

Where

P_{max} is the maximum expected number of people at a given level of certainty.

P_{min} is the minimum expected number of people at a given level of certainty.

$\bar{p}$, d and v are as defined in A(1).

$s_{\bar{p}}$ is the standard error of estimate of average persons per dwelling unit for the appropriate dwelling unit type.

n is the number of standard errors required to give the desired level of certainty (for approximately 95% certainty n = 2).

Example:

Estimation of the maximum and minimum expected population living in d = 100 single family detached dwelling units in an ASP Area.

The calculation is based on the following information:

a) The mix of dwelling units by number of bedrooms is the standard mix (see example A(1)).

b) The average person per dwelling unit ($\bar{p}$) is standard (see example A(1)).

appendix 2 population projection formulae for small areas based on average persons per dwelling unit

c) All dwelling units are occupied (i.e. v = 0).

d) The expected population range is to be calculated at a level of 95% confidence (i.e. 2 standard errors).

e) The standard error of estimate for single family dwelling units in ASP Areas is 0.01 persons per dwelling unit.

The calculations are as follows:

$$P_{max} = (\bar{p} + n(s_{\bar{p}})) \times d(1 - v)$$
$$= (3.46 + 2(0.01)) \times 100(1)$$
$$= 3.48 \times 100$$
$$= 348$$

$$P_{min} = (\bar{p} - n(s_{\bar{p}})) \times d(1 - v)$$
$$= (3.46 - 2(0.01)) \times 100$$
$$= 3.44 \times 100$$
$$= 344$$

Inference:

The estimated value for average persons per dwelling unit for single family detached dwelling units in ASP Areas is between 3.44 and 3.48 with 95% confidence. Therefore, the expected number of people in 100 units would be in the 344 to 348 person range.

N.B.

The range calculated above is based on standard error of estimate of average person per dwelling unit for the entire population of single detached dwellings in ASP Areas. The actual number of people in a small set of units (for example the 100 units considered in the above calculations) are subject to variation due to normal difference or "standard deviation" within the total population. Standard deviation may be calculated for each of the reported sub-populations of dwelling units using the formula:

$$s_p = s_{\bar{p}}\sqrt{n}$$

Where

s_p is the standard deviation of the study sample

$s_{\bar{p}}$ is the standard error of the study sample

n is the number of cases in the sample

B. Projections Using A Variable "Number of Bedrooms" Mix

1. The average person per dwelling unit figure for each type of dwelling unit in each area is closely related to the number of bedrooms in the dwelling units. Consequently, where the "number of bedrooms" mix of dwelling units is substantially different from that reported in this study, an expected population may be calculated based on the "number of bedrooms" mix. This calculation should be considered a special case calculation for small scale use. Large scale changes in "number of bedrooms" mix would likely disrupt the relationship between number of bedrooms and number of people as it currently exists in Edmonton. The population projection is obtained from the following formula:

$$P' = \sum_{j=1}^{q} \bar{p}_j \times d_j (1 - v_j)$$

Where

P' = total population

$\bar{p}_j$ = average persons per dwelling unit for the ith "number of bedrooms" category

d_j = the number of dwelling units in the ith "number of bedrooms" category

v_j = the vacancy rate for dwelling units in the ith "number of bedrooms" category

appendix 2 population projection formulae for small areas based on average persons per dwelling unit

q = number of different "number of bedrooms" categories

Example:

Estimation of the expected population in d = 100 single detached dwelling units in an ASP Area.

The calculation is based on the following information:

a) The mix of dwelling units by number of bedrooms is:

two bedroom - 30 dwelling units, three bedroom, 60 dwelling units, four or more bedrooms - 10 dwelling units.

b) The average person per dwelling unit is:

two bedroom - 2.62 PPDU, three bedroom - 3.36 PPDU, four or more bedrooms - 4.08 PPDU.

c) All dwelling units are occupied (i.e. vacancy rate = 0).

The calculation is:

$$P = \sum_{j=1}^{q} \bar{p}_j \times d_j (1 - v_j)$$

$$= \sum_{1}^{3} (2.62 \times 30 (1)) + (3.36 \times 60 (1)) + (4.08 \times 10 (1))$$

$$= 79 + 202 + 41$$

$$= 322$$

appendix 3 dwelling unit population strata and sample clusters

Population Strata	Cluster Name	Subdivisions, Plan Areas or Neighbourhoods Within Clusters
I City Centre	1. City Centre	Oliver, Garneau and Downtown ARP Areas
II Older Neighbourhoods	2. Grovenor	West Glenora, West Grove and Part of Jasper Place Subdivisions
	3. Calder-Elm Park	Calder and Elm Park Subdivisions
	4. Westwood	Northcote, Westwood, Norwood Extension, and Part of Hudson Bay Reserve Subdivisions
	5. Delton	Woodland, Woodland Addition, Fairview, West Delton and Delton Subdivisions
	6. Highlands	The Highlands, Bellevue Addition, Mount Royal and Mount Royal Park Subdivisions
	7. Forest Heights	Forest Heights, Terrace Heights and River Lot 33 Subdivisions
	8. Bonnie Doon	Spruce Centre, River Heights, River Heights Addition, Shelbourne Addition, Highland Park, Highland Park Addition, Scona Brae, Bonnie Doon and Part of Vogel Subdivisions
	9. Park Allen	Parkdale South, Park Allen Martin Estate and North East 20 Subdivisions
III Mature Suburban Areas	10. Dovercourt	Dovercourt, Sherbrooke and Woodcroft Subdivisions
	11. Londonderry	Kilkenny and Kildaire Neighbourhoods
	12. Rundle Heights	Abbotsfield and Rundle Heights Subdivisions
	13. Avonmore	Avonmore, Avonmore Addition, Argyll, Hazeldean and Irvine Estate Subdivisions
	14. Duggan	Duggan, Rideau Park and Shaughnessy Neighbourhoods
	15. Windsor Park	Windsor Park, River Lot 3, University Place Addition, Belgravia Riverview Heights and Douglas Subdivisions Plus Grand View Heights and Lansdowne Neighbourhoods
IV Area Structure Plan Areas	16. Callingwood	Callingwood North, Callingwood South and Westridge Neighbourhoods, Plus Oleskiw Community
	17. Stirling	Baturyn, Loreli and Beaumaris Neighbourhoods
	18. Claireview	Sifton Park, Belmont and Kernohan Neighbourhoods
	19. Southwood-Millhurst	Pollard Meadows, Daly Grove, Crawford Plains, Sakaw and Meyokumin Neighbourhoods
	20. Lakewood	Tipaskan, Kameyosek, Meyonohk, Mill Woods Park Neighbourhoods
	21. Ermineskin-Yellowbird	Steinhauer, Ermineskin, Skyrattler, Keheewin and Bearspaw Neighbourhoods

appendix 4 residential land use districts

INTRODUCTION

The following descriptions provide general information on the various Land Use Districts which the City applies to guide and regulate the use and development of land. These condensed descriptions are for the purpose of convenience only. Bylaw 5996, the Land Use Bylaw and all amendments thereto may be purchased at the Planning Department, Maps and Publications Counter, 13th Floor, 10020 - 101A Avenue (428-3423), and should be consulted in interpreting and applying the Bylaw. Questions concerning the interpretation and application of the Bylaw may be directed to the Land Use Control Section (428-3160) of the Planning Department.

RESIDENTIAL DISTRICTS

RF1 - SINGLE DETACHED RESIDENTIAL DISTRICT

A district permitting only single detached housing. Other residential and residential related uses such as semi-detached housing, homecrafts and group homes may be approved at the discretion of the Development Officer, subject to the right of appeal to the Development Appeal Board.

RF2 - LOW DENSITY INFILL DISTRICT

A district usually applied to existing developed areas of the city, in which single family housing is permitted. The district provides for sensitive infill at a higher density by including semi-detached housing as a discretionary use.

RPL - PLANNED LOT RESIDENTIAL DISTRICT

A district primarily for single detached housing, providing greater flexibility of site size and site design on a planned basis. Semi-detached housing, up to four units of row housing and other residential-related uses may be approved at the discretion of the Development Officer.

RF3 - LOW DENSITY REDEVELOPMENT DISTRICT

A district usually applied to existing developed areas permitting single and semi-detached housing. On appropriately sized sites, duplex housing and up to four units of row or apartment housing are discretionary uses, through conversion, infill or redevelopment.

RF4 - SEMI-DETACHED RESIDENTIAL DISTRICT

A district intended primarily for semi-detached housing, but also permitting single detached housing. Duplex housing, up to four units of row housing, and other residential-related uses are discretionary.

RF5 - ROW HOUSING DISTRICT

A district permitting row, linked and semi-detached housing generally developed to a maximum of 42 dwellings/hectare (ha), on sites less than 1.4 ha. Similar developments on larger sites and single detached housing are discretionary uses.

RF6 - MEDIUM DENSITY MULTIPLE FAMILY DISTRICT

A district permitting stacked row, linked, semi-detached and duplex housing, generally developed to a maximum of 80 dwellings/ha, on sites less than 1.4 ha. Similar developments on larger sites, family oriented apartments and single detached housing are discretionary uses.

RA7 - LOW RISE APARTMENT DISTRICT

A district permitting apartment, stacked row, and linked housing of not more than four storeys, developed to a maximum of 125 dwellings/ha on sites less than 1.4 ha. Similar developments on larger sites, single detached, semi-detached and duplex housing are discretionary uses.

appendix 4 residential land use districts

RA8 - MEDIUM RISE APARTMENT DISTRICT

A district permitting apartment, stacked row and linked housing, developed to a maximum of 325 dwellings/ha on suitably sized sites. In addition, similar developments on larger sites, single detached, semi-detached and duplex housing, personal service shops, convenience retail stores, professional offices and clinics are discretionary.

RA9 - HIGH RISE APARTMENT DISTRICT

A district permitting apartment, stacked row and linked housing, developed to a maximum of 325 dwellings/ha on suitably sized sites. In addition, similar developments on larger sites, single-detached, semi-detached and duplex housing, personal service shops, convenience retail stores, professional offices and clinics are discretionary.

DC3 - TEMPORARY HOLDING DISTRICT

A Direct Control District to temporarily control the development of land for which Council has authorized the preparation of an Area Redevelopment Plan or Scheme. Uses are those specified in the land use designation superceded by this District except those which conflict with any objectives specified in a schedule for the District.

appendix 5 population density estimates by selected land use districts (zoning categories) 1974, 1978

Land Use District	Zone	Principle Land Use	Average P.P.D.U.* 1974	1978
RF1	R1	Single Detached	3.79	3.26
RF4	R2	Side by Side Duplex	4.01	2.92
		Up-down Duplex	2.98	2.92
RF5	R2A	Row (Rental)	3.97	3.28
		Row (Condominium)	3.66	3.28
RA7	R3	Walk-up Apartment	2.51	2.17
"p" designator	P3	Row	4.32	3.05
		Apartment	3.38	3.05
RA8	R5	Walk-up Apartment	2.51	
		High Rise Apartment	1.89	
RA9	R6	High Rise Apartment	1.89	

* All figures are city-wide.

CITY OF EDMONTON PLANNING DEPARTMENT

appendix 6 population densities statistics by number of bedrooms

Building Structure Type	Area Within the City	Land Use District	Number of Bedrooms: Bachelor Units	One	Two	Three	Four	All Units
Single Detached Dwellings	Area Structure Plan Areas	RF1	-	-	2.62	3.36	4.08	3.46
	Mature Suburban Areas	RF1	-	1.55	2.31	3.18	3.82	3.21
	Older Neighbourhoods and City Centre	RF1	-	1.43	2.16	2.84	3.43	2.61
		RF2, RF3, RA7 & DC3	-	1.46	2.25	2.95	3.75	2.52
Semi-detached Dwellings	Area Structure Plan Areas	RF4	-	-	2.63	3.37	4.30	3.32
	Mature Suburban Areas, Older Neighbourhoods and City Centre	All Land Use Districts	-	-	2.46	3.16	3.97	3.18
Duplex Dwellings	All Areas	All Land Use Districts	-	1.28	2.27	3.11	3.90	2.81
Triplex and Fourplex Dwellings	All Areas	All Land Use Districts	-	1.78	2.37	2.69	4.00	2.44
Row Housing Dwellings - Rental	Area Structure Plan Area	RF5	-	1.39	2.42	3.27	4.21	3.17
		RA7	-	1.17	1.93	3.26	-	2.48
	Mature Suburban Areas and Older Neighbourhoods	RF5	-	1.49	2.37	3.39	5.03	3.09
		RA7 & RA8	-	-	2.46	3.42	-	3.27
Row Housing Dwelling - Condominium	Area Structure Plan Areas	RF5	-	-	2.33	2.91	3.86	2.93
		RA7 & RA8	-	-	2.33	2.93	-	2.88
	Mature Suburban Areas	RF5	-	-	2.18	3.28	3.75	3.24
		RA7	-	-	2.33	3.28	3.86	3.02
Walk-up Apartment Dwellings - Rental	Area Structure Plan Areas	RA7	-	1.46	2.25	3.30	-	2.04
		RA8	1.33	1.52	2.33	3.93	-	2.17
	Mature Suburban Areas	RA7	1.45	1.46	2.19	3.35	-	1.91
	Older Neighbourhoods	RA7	1.13	1.53	2.25	2.85	-	1.71
	City Centre	RA7 & DC3	1.09	1.31	1.93	2.67	-	1.45
Walk-up Apartment Dwellings - Condominium	Area Structure Plan Areas	RA7	1.08	1.44	2.07	2.62	-	1.82
	Mature Suburban Areas	RA8	1.00	1.22	2.12	3.00	-	2.00
	City Centre	RA8, RA9 & DC3	1.07	1.32	1.80	2.60	-	1.49
High Rise Apartment - Rental	City Centre	RA8, RA9 & DC3	1.07	1.28	1.91	2.25	-	1.43
High Rise Apart - Condominium	City Centre	RA8, RA9 & DC3	1.00	1.38	1.76	2.34	2.33	1.71

appendix 7 percentage mix of dwellings by number of bedrooms

Building Structure Type	Area Within the City	Land Use District	Number of Bedrooms: Bachelor Units	One	Two	Three	Four
Single Detached Dwellings	Area Structure Plan Areas	RF1	-	-	6%	75%	19%
	Mature Suburban Areas	RF1	-	1%	12%	63%	24%
	Older Neighbourhoods and City Center	RF1	-	5%	35%	48%	12%
		RF2, RF3, RA7 & DC3	-	9%	51%	31%	9%
Semi-detached Dwelling	Area Structure Plan Areas	RF4	-	-	12%	84%	4%
	Mature Suburban Areas, Older Neighbourhoods and City Centre	All Land Use Districts	-	-	11%	77%	12%
Duplex Dwellings	All Areas	All Land Use Districts	-	9%	24%	59%	8%
Triplex and Fourplex Dwellings	All Areas	All Land Use Districts	-	18%	34%	46%	2%
Row Housing Dwellings - Rental	Area Structure Plan Area	RF5	-	2%	13%	80%	5%
		RA7	-	3%	53%	44%	-
	Mature Suburban Areas and Older Neighbourhoods	RF5	-	3%	33%	58%	6%
		RA7 & RA8	-	-	16%	84%	-
Row Housing Dwellings - Condominium	Area Structure Plan Area	RF5	-	-	4.5%	91%	4.5%
		RA7 & RA8	-	-	8%	92%	-
	Mature Suburban Areas	RF5	-	-	5%	91%	4%
		RA7	-	-	29%	69%	2%
Walk-up Apartment Dwellings - Rental	Area Structure Plan Areas	RA7	-	36%	56%	8%	-
		RA8	1%	30%	63%	6%	-
	Mature Suburban Area	RA7	4%	47%	41%	8%	-
	Older Neighbourhoods	RA7	10%	61%	26%	3%	-
	City Centre	RA7 & DC3	11%	66%	21%	2%	-
Walk-up Apartment Dwellings - Condominium	Area Structure Plan Area	RA7	6%	34%	55%	5%	-
	Mature Suburban Areas	RA8	5%	29%	44%	22%	-
	City Centre	RA8, RA9 & DC3	8%	57%	32%	3%	-
High Rise Apartment - Rental	City Centre	RA8, RA9 & DC3	12%	59%	28%	1%	-
High Rise Apart - Condominium	City Center	RA8, RA9 & DC3	0.5%	22%	71%	6%	0.5%

appendix 8 household profile summary

Building Structure Type	Area Within the City	Single Adult	Adult Pair	Adult Group	Single Adult with Child	Adult Pair with Child	Adult Group with Child
Single Detached	Area Structure Plan Areas	3%	24%	7%	1%	55%	10%
	Mature Suburban Areas	8%	30%	18%	2%	32%	10%
	Older Neighbourhoods and City Centre	20%	38%	15%	2%	20%	5%
Semi-detached	Area Structure Plan Areas	8%	23%	8%	5%	46%	10%
	Mature Suburban Areas, Older Neighbourhoods and City Centre	6%	27%	20%	5%	35%	7%
Duplex	All Areas	16%	32%	18%	4%	24%	6%
Triplex & Fourplex	All Areas	21%	38%	17%	6%	15%	3%
Row Housing - Rental	Area Structure Plan Areas	13%	22%	7%	17%	36%	5%
	Mature Suburban Areas and Older Neighbourhoods	10%	19%	6%	16%	43%	6%
Row Housing - Condominium	Area Structure Plan Areas	11%	27%	9%	8%	40%	5%
	Mature Suburban Areas	13%	23%	8%	10%	38%	8%
Walk-up Apartment - Rental	Area Structure Plan Areas	27%	42%	5%	9%	15%	2%
	Mature Suburban Areas	38%	34%	5%	6%	15%	2%
	Older Neighbourhood Areas	47%	37%	3%	4%	8%	1%
	City Centre	63%	30%	2%	1%	4%	0%
Walk-up Apartment - Condominium	Area Structure Plan Areas	30%	46%	3%	4%	15%	2%
	Mature Suburban Areas	37%	34%	8%	8%	11%	2%
	City Centre	59%	34%	2%	1%	4%	0%
High Rise Apartment - Rental	City Centre	63%	31%	2%	1%	3%	0%
High Rise Apartment - Condominium	City Centre	39%	51%	6%	1%	3%	0%

appendix 9 ratio of persons to bedrooms

Building Structure Type	Area Within the City	Land Use District	Number of Bedrooms: Bachelor Units	One	Two	Three	Four
Single Detached Dwellings	Area Structure Plan Areas	RF1	-	-	1.31	1.12	1.02
	Mature Suburban Areas	RF1	-	1.55	1.16	1.09	0.96
	Older Neighbourhoods and City Centre	RF1	-	1.43	1.08	0.95	0.86
		RF2, RF3, RA7 & DC3	-	1.46	1.13	0.98	0.94
Semi-detached Dwelling	Area Structure Plan Areas	RF4	-	-	1.32	1.12	1.08
	Mature Suburban Areas Older Neighbourhoods and City Centre	All Land Use Districts	-	-	1.21	1.05	0.99
Duplex Dwellings	All Areas	All Land Use Districts	-	1.28	1.14	1.04	0.98
Triplex and Fourplex Dwellings	All Areas	All Land Use Districts	-	1.78	1.20	0.90	1.00
Row Housing Dwellings - Rental	Area Structure Plan Area	RF5	-	1.39	1.21	1.09	1.05
		RA7	-	1.17	0.97	1.09	-
	Mature Suburban Areas and Older Neighbourhoods	RF5	-	1.49	1.19	1.13	1.26
		RA7 & RA8	-	-	1.23	1.14	-
Row Housing Dwellings - Condominium	Area Structure Plan Area	RF5	-	-	1.17	0.97	0.97
		RA7 & RA8	-	-	1.17	0.98	-
	Mature Suburban Areas	RF5	-	-	1.09	1.09	0.94
		RA7	-	-	1.17	1.09	0.97
Walk-up Apartment Dwellings Rental	Area Structure Plan Areas	RA7	-	1.46	1.13	1.10	-
		RA8	1.33	1.52	1.17	1.31	-
	Mature Suburban Area	RA7	1.45	1.46	1.10	1.12	-
	Older Neighbourhoods	RA7	1.13	1.53	1.13	0.95	-
	City Centre	RA7 & DC3	1.09	1.31	0.97	0.91	-
Walk-up Apartment Dwellings - Condominium	Area Structure Plan Area	RA7	1.08	1.44	1.04	0.87	-
	Mature Suburban Areas	RA8	1.00	1.22	1.06	1.00	-
	City Centre	RA8, RA9 & DC3	1.07	1.32	0.90	0.87	-
High Rise Apartment - Rental	City Centre	RA8, RA9 & DC3					
High Rise Apart.- Condominium	City Center	RA8, RA9 & DC3	1.00	1.38	0.88	0.78	0.58